

20th Century Horticulture.

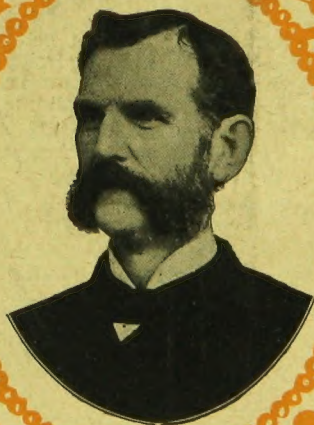
R. M. KELLOGG'S

Great Crops of Small Fruits

How He Grows Them.



A TEXT BOOK
FOR
PROGRESSIVE
FRUIT
GROWERS



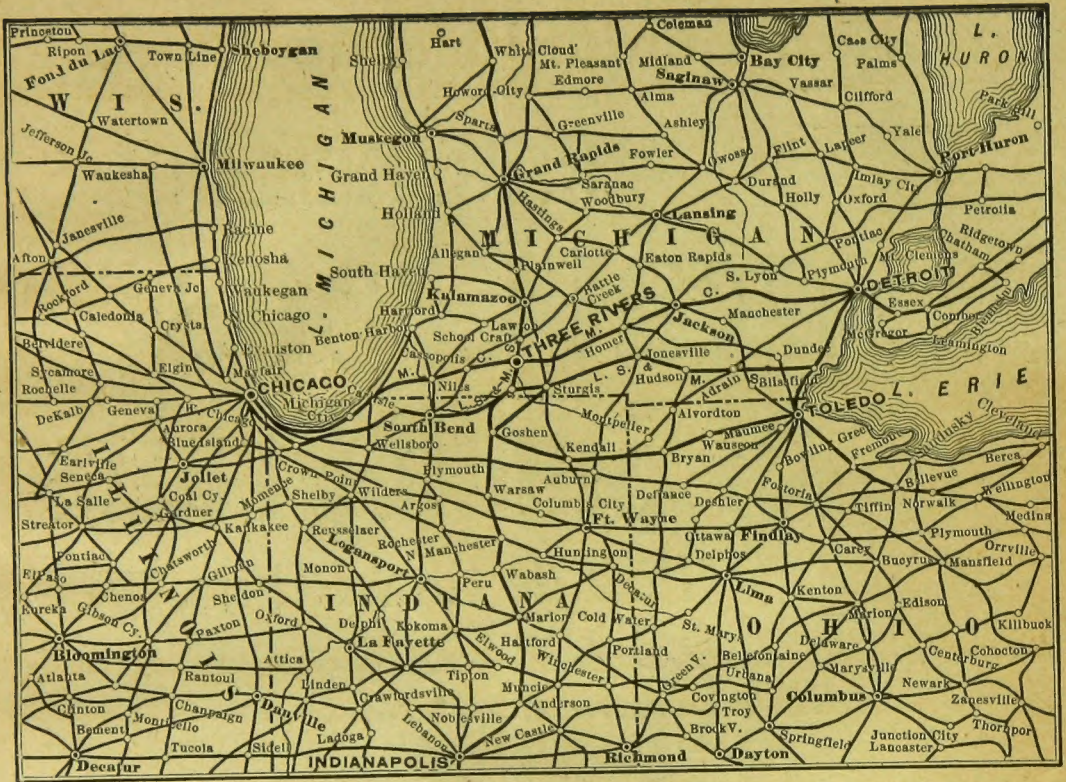
THE
LARGEST CROPS
FINEST
FRUIT
LEAST
LABOR

1901

A treatise on plant life, and the laws which govern the development of fruit.

— THREE RIVERS, MICHIGAN.

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THIS MAP shows our location in the Michigan Fruit Belt on two great railroad systems with several fast through express and freight trains daily, delivering freight the same night it leaves here in Chicago, Toledo, Indianapolis and Detroit, where plants are sent in fast through freights to St. Louis, Kansas City, Omaha, St. Paul, Cincinnati, Cleveland, Buffalo, and all intermediate points.

Place your orders early so the plants may be sent while dormant and weather cool. If to be forwarded by freight, it is advisable to confer with your local freight agent as to time from above named points. Give full directions and route for shipment.

TWENTIETH CENTURY HORTICULTURE.

The question of permanently improving plants by growing them under the most favorable conditions for inducing desirable variations and rapidly selecting "Mother Plants" from those which make the greatest and best variations for the betterment of the variety, has the endorsement of all our most eminent scientists.

Prof. L. H. Bailey, the foremost horticultural investigator of our generation, says on page 128 of his excellent book on "Plant Breeding:" "We need not so much varieties with new names as we do a general increase in productiveness and efficiency of the types we already possess." Page 118, "The person who is wishing for new varieties should look critically to all perennial plants and particularly to trees and shrubs for bud varieties or sports. Page 122, "Even when the desired variety is attained it must be kept up to the standard by constant attention to selection. There is no real stability in the forms of plant life." Page 119, "It is possible to improve and fix the type by bud selection as well as seed selection."

For seventeen years this has been my work and during that time I have grown some of the largest crops of berries yet recorded, and since I have been propagating these plants for others I am assured by horticulturists in all parts of the country that they are now growing two berries of high quality where one berry of low quality grew before.

To secure my present facilities for developing plants along these lines has been the work of years, but now that it is accomplished I shall the coming spring be able to send out a strain of strictly thoroughbred plants never before equaled.

They can be furnished for "Mother Plants" for the propagating beds of growers or for their general planting when they find themselves a year behind in growing their own plants.

In revising this booklet for the year 1901, I have sought to introduce such illustrations and other matter as would make the salient features more plain and comprehensive. It should be studied carefully for we must not forget cultural methods are factors of prime importance in fruit growing.

Very truly yours,

R. M. KELLOGG.

N. B.—The title and contents of the various editions of this pamphlet have been fully copyrighted and nurserymen will be held responsible for taking extracts in making up their catalogues, or others in preparing papers for the press or horticultural meetings.



R. M. Kellogg searching for the ideal plant and bud variations with a view of improving the variety.



The Professor of the Agricultural College teaching a class how to select animals to improve the breed.

SETTLED FACTS.

Like begets like whether in breeding plants or animals.

A scrub never begat a thoroughbred plant or animal!

Selection and restriction is the basis of all improvement.

The pedigree of a plant is the history of its breeding and determines its value for bearing fruit.

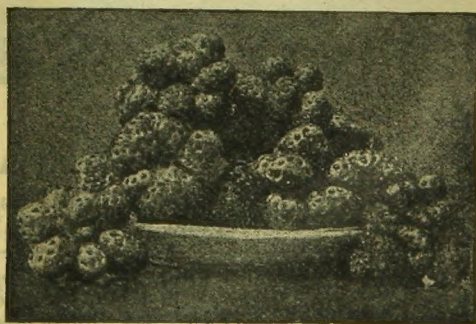
THE NEW HORTICULTURE.

In the following pages I have given the methods which have enabled me to produce the largest crops of fine fruits yet reported to have been grown.

That the measures taken to produce these results may be better understood by the reader, I have endeavored to bring out the salient features by a series of direct questions and answers:

What is a Pedigree Plant?—the word "pedigree" means a detailed description of individual ancestry in a lineal ascent. It is used in a technical sense, signifying skilful breeding or in other words that the plant has been propagated through a series of years from the most perfect plant of that variety which could be found and that it has been kept under restriction so that its physical condition is such that it will devote its energies to the production of fruit instead of wood buds. It is a mistake to say that because a plant is propagated from a bud and has but one parent it is not a distinct individual as much as one produced sexually or through the seeds. While it is true that it partakes more largely of the mother nature and with less variation than through seeds yet changes are constantly going on as you can readily see in any berry field. A careful study of the physical condition of plants will readily show wide differences, and these differences are surely transmitted through their runners. The following propositions are submitted in evidence of these facts.

What is Fruit?—It is a substance which grows on certain plants and trees in which seeds form and the development of fruit flesh depends on the seed bearing habit and constitutional or seminal vigor of the plant. If the plant through neglect or bad propagation has lost the habit or ability to produce seeds little fruit can be secured.



Deformed Strawberries, showing lack of Potency of Pollen.

What are Seeds?—They are eggs of the plant. We put hens eggs under the hen and in 21 days out pop the chickens: we call this hatching. We put the seeds of the strawberry in moist warm ground and in a few days up spring new plants. We call this seed germination but we might call it hatching the seeds.

Are there not Plants which produce Fruit without Seeds?—Yes, the banana, navel orange, pine apple, etc. It is well known that these fruits once produced seeds but the habit has been lost. They are regarded as freaks and are the exception among fruits. The strawberry, apple, peach, or any of the fruits grown in this latitude, produce seeds. If there are no seeds there will be no fruit. A knotty or deformed berry or apple is caused by the lack of vitality of the seeds in the defective part.



"Germinating" Chickens.



PHYSICAL CULTURE. (SEE PAGE 5.)

The physical development of plants both in fruit and foliage is a matter of well directed manipulation, and is engaging the attention of scientists throughout the land.

On what does the production of large crops of fruit depend?—On the physical condition of the plants and their natural habit of breeding though fruit buds instead of wood buds or runners, and then assisting the plant to do its work by supplying proper food and thorough tillage.

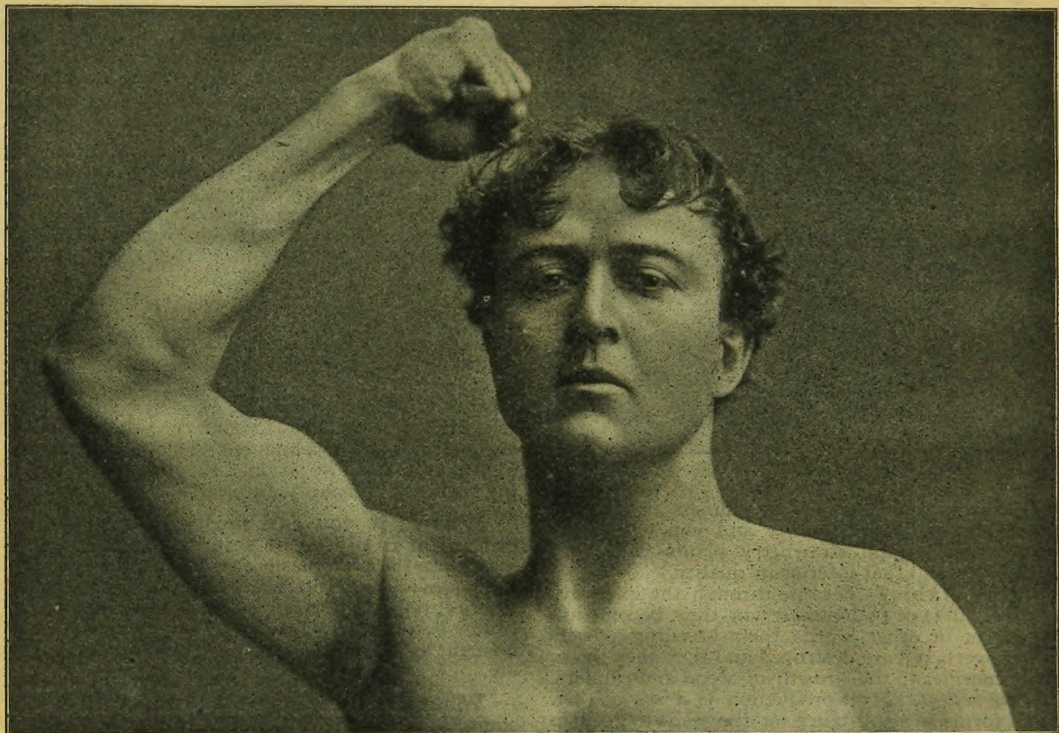
Are plants male and female?—Yes, the sexual organs found in their blossoms are identical with all the parts named in an animal and fecundation takes place between them in a similar way.

Do plants have the breeding passions possessed by animals?—Yes. It is even more intense than with animals. If plants are not pruned, thus relieving them of a part of their fruit buds, they will fruit themselves into impotency or what in an animal would be called seminal exhaustion.

How is this condition manifested?—You often see a field of strawberries or bush fruits on good rich land with plants or bushes in a vigorous condition, but they produce very little fruit. While

it is true that soil conditions and food supplies are factors of great importance, yet the chief cause of their unfruitfulness is the lack of potency in pollen and weakness of pistils.

Will you give some illustrations of this?—Notice that when apple trees bloom very full—white as snow—when every twig is loaded with blossoms very little fruit sets and what does grow is small and inferior in quality. This is because the tree does not have the ability to impart potency or life to so much pollen. Our largest crops of fine fruit are grown when we have moderate bloom or the trees have been restricted by close pruning before blossoms open in the spring. They can then concentrate their powers on fewer blossoms, the potency of pollen is strong and the seeds are vigorous, with consequent full development of fruit flesh. This is why the successful orchardist prunes his trees and vines every year, cutting off a large part of the buds. Everybody knows that unpruned orchards, vineyards or fruit bushes quickly become unfruitful.



PHYSICAL CULTURE.

(SEE PAGE 5)

The physical development of man, both in mind and muscle is a matter of well directed manipulation, and is engaging the attention of scientists throughout the land.

How do you prune Strawberries to prevent exhaustion?—Having set the plants in the spring we cut the blossom buds off as soon as they appear, to prevent the plants from undergoing the exhaustive process of pollen secretion at this time before the roots have become established to sustain them as this greatly impairs their vitality.

Do you cut off any blossoms after the first year?—No, having bred the plants up to great vigor by selection and restriction and physical culture and given them the first year to grow and develop their fruit buds, we now let them throw all their energies to the production of fruit for two or three years when their vitality is destroyed and we then plow them under and take new vigorous plants from the propagating bed for the new setting.

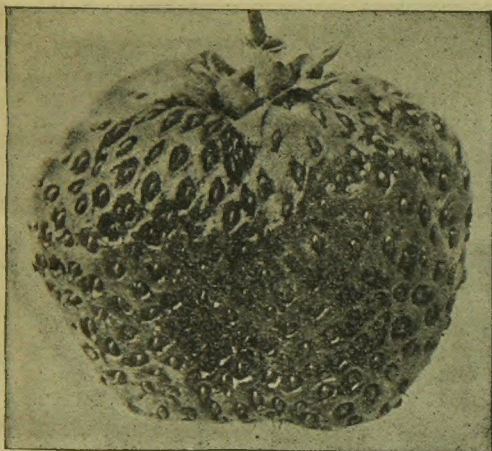
What objection have you to the custom of taking plants from those set to fruit the previous spring from which the blossoms were removed and doing this year after year?—It is a law of nature that any faculty never exercised ceases to exist. If you pick blossoms off year after year the plants lose the habit of fruit production and then multiply themselves by making great numbers of runners or large bushes. You can only train them to fruit by allowing them to do so, but they must not be permitted to overbear and exhaust themselves, hence the necessity of restricting the mother plant.

Is not the largest plant with plenty of roots always the best for planting?—No, not by any means. A big plant may be utterly destitute of fruiting vigor. If it is exhausted in seed bearing it will throw all its energies into making

leaves and runners. It is like a barren animal which if well fed and stabled will grow large and fat, but this extra feed and care would not make it breed, but would rather increase the tendency to barrenness. So, in like manner giving a barren plant lots of manure and tillage will cause it to go on making large leaves, crowns, runners and roots but will not cause it to produce fruit; whereas a thoroughbred plant of the same size and rootage, when a runner is cut will build up new crowns and fruit buds.

Why can you not take plants from alongside the matted row of beds set the previous year for the fruiting field?—These are the weakest plants as they are the last to form in the fall, and generally have imperfect buds which fail to develop in the spring, causing them to lose the habit of forming fruit buds. Their roots are generally immature and being on the outer edges of the row are nearly always so weakened by freezing and thawing that it is difficult to make them grow which explains the long vacant places in the field. *The good and bad plants* cannot be separated, some being fruitful and some unfruitful greatly reduces the crop both in quality and quantity.

How shall we make a practical test of this?—In your vineyard, blackberry, raspberry and strawberay fields select one row each and give them the same cultivation as the others but do not prune the bushes or cut off any blossoms. Let them bear all they will each year. Notice that after one very large crop they bear smaller berries and fewer in number, but the bushes continue to grow vigorously and the strawberries throw out a great number of runners but set little fruit. Now



The Wm. Belt.

take cuttings and strawberry runners from these plants and cultivate carefully and you will get a host of bushes and strawberry plants with very little fruit, and that inferior in quality.

Why is this?—Because through the excessive seminal effort of pollen secretion they become impotent or in other words their breeding powers being overtaxed are destroyed and then they throw their energies to the growth of wood and runners. *Let me repeat.* Fruit production is a *sexual act*. Fruit forms as a substance for the seeds to grow in and the development of fruit depends entirely on the seminal vigor of the plant and large crops of fine fruit cannot be grown on trees, bushes or plants which are weakened in fruit production.

Is not rich soil and extra good tillage the true basis of large crops of fine fruit?—These are absolutely necessary. No one can expect plants to respond in fine fruit when they are overrun with weeds and have little plant food in the soil, but note carefully the fact that exhausted plants cannot be forced into fruitage in this way.

How are "cheap" plants grown?—These exhausted plants throw all their energies to making runners. They will produce several times as many plants as those trained to produce fruit and hence growers are able to offer them for little more than the cost of digging and packing.

Will not exhausted plants make large roots and leaves?—Certainly they will. The trouble is, being exhausted in seed bearing they will not form fruit buds and the more you manure and cultivate the larger your plants will grow but they will make runners instead of bearing fruit.

Do the same laws of nature hold good in breeding plants which obtain in breeding animals?—When breeding sexually they do in all particulars. All plants propagated by seeds have a father and mother just the same as an animal. The seeds are nothing but the eggs of the plant and contain the life germ the same as the bud, but plants may be propagated without the aid of sexes by dividing the protoplasm in the nodes and internodes of the wood in which variations are less.

SEEDLINGS.

Why is it our new varieties are so largely seedlings?—We know that many of our best varieties are bud sports or variations. Nearly all are found by accident here and there. Often a single plant in an old bed attracts attention or in some fence corner or out of the way place. Seedlings vary much more because they have a

father and mother and get two parental impressions and may take a greater impress from the one than the other, thus in some families of children they all resemble the father, in others they look more like the mother and sometimes like the grandparents and in some instances have no family resemblance.

Is it difficult to get valuable varieties through seedlings?—Yes, it is very difficult; the variations are so great that out of twenty thousand seedlings you might not get one worthy of introduction for general cultivation. We never get two seedlings exactly alike. While we can get new varieties quicker in that way, yet they are not reliable because they vary so greatly from the desired type. When we find a valuable seedling, on account of these great variations we multiply it by its runners or buds as in layering, grafting, etc., until their characteristics are fixed by continuously selecting the best, throwing out the weak ones and encouraging the development of good qualities by high tillage and restriction. In other words treating them by "physical culture."

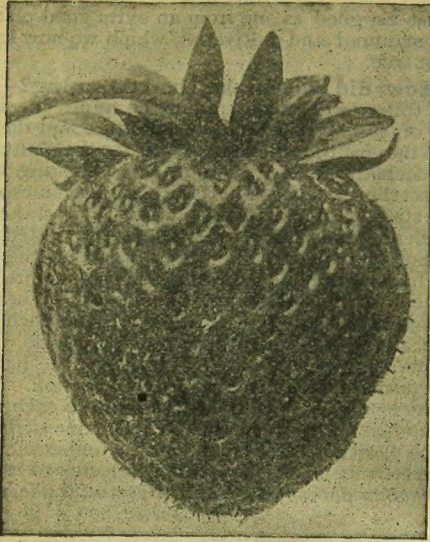
Why is it you can multiply a plant by cutting it in pieces as scions, runners, etc.?—Because the protoplasm or life principle is in all the nodes and internodes throughout the branches where it remains dormant until excited into active life by cutting them apart and giving them nourishment as by making cuttings, budding, grafting, etc.

What is Protoplasm?—It is a jelly like substance in which the principle of life resides. Scientists have proven that the protoplasm of plants is exactly the same as that of animals. The strawberry plant multiplies itself by this protoplasm being located in the nodes of the runners which is the same as the nodes in the tree or bush. It is the same potential life germ found in the seeds. The blackberry and red raspberry form these nodes in the roots so that we can cut the roots up and get a plant from each piece. The black raspberry and dewberry form them in the tips of the canes which we bury in the ground and the germ develops into a plant the same as if it were a seed.



The Bubach.

Why is it that plants propagated by buds do not vary so much as those grown from seeds?—Because, figuratively speaking they



Senator Dunlap.

have a mother but no father. They receive only the impression of the "mother" plant and therefore their fruit more closely resembles it; in other words, each runner or cutting is the divided protoplasm of the mother plant and therefore possesses all the weakness or good qualities of the parent plant. If the parent plant is weak the runner will be weak. If strong and vigorous that quality goes with the bud.

Do these asexual plants or buds and runners never vary?—Yes. Under changed conditions and when stimulated by high tillage they make very marked variations. Sometimes so much as to be regarded as entirely new and distinct varieties.

Florists who propagate largely through cuttings pay the greatest attention to bud variations by selecting those which make desirable changes to propagate from and in this way have produced magnificent specimens of double flowers and have greatly increased the blooming habit of plants and thus originated a large number of new varieties. The magnificent double roses and variegated foliage plants are produced by this method. There is a long list of bud varieties in fruit produced in this way which are called sports.

Will these bud sports transmit their peculiarities to new plants grown from them?—Yes. There is no doubt about this. When you find a good variation even a single limb on a tree or strawberry runner you can retain it by propagating from it and if you find a still better variation in these new plants you can further improve the variety by propagating from them.

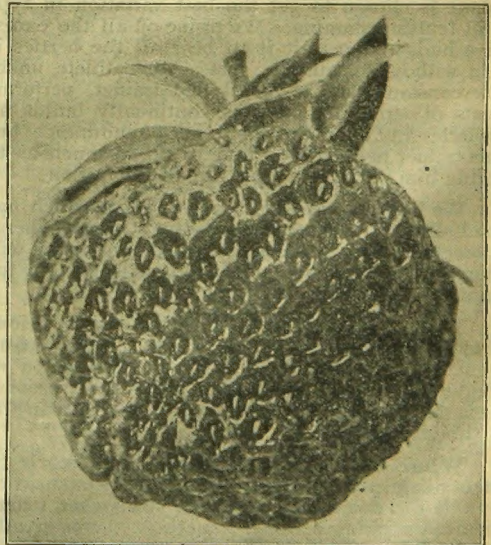
As an illustration we may cite the orange orchards of Florida. Orange trees were formerly very thorny but Nurserymen began taking scions from limbs which had fewer thorns until now the trees are all thornless. If selections had been made from limbs having the most thorns, the trees would still have been covered with them.

Is this the way you breed up your plants?—Yes. While the varieties retain their old names they are practically new sorts because they are so greatly improved in general fruiting vigor.

Why is it that in a bed of common plants we occasionally see one growing extra fine berries while a great majority of plants produce only a few small berries?—Because the plants not being selected each year soon differ greatly in vital or seminal vigor. Some are more exhausted or devitalized than others. Occasionally a plant has partially recovered and bears a few large berries, but as a rule fruit growers and nurserymen pay no attention to the condition of their plants in regard to fruiting vigor, but propagate from anything and everything and so under high tillage one plant makes runners and another fruit so that the yield on the average is only 75 to 100 bushels of inferior fruit to the acre while if each plant were fruiting to its full capacity there would be several times as many quarts of a very much higher quality which would command the highest price and always have a ready sale, and this difference represents the real value of thoroughbred plants as compared with common plants.

Why is it that fruit growers in general have not improved their plants in this way?—Because they did not understand that plants could be improved. It was a mystery to them why their plants when well cultivated and manured made so many runners but produced so little fruit. We might as well ask why the telephone was not in general use forty years ago. The principle of transmitting sound by electricity had not then been discovered.

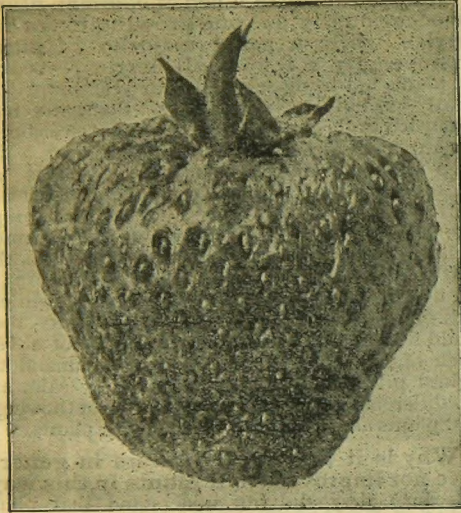
What would be the effect of continuously selecting through a series of years the poorest plants you could find for propagation?—The varieties would all run out and that is what a great majority of fruit growers are doing as already stated. They take the tip plants by the side of the matted row which are the last to form in the fall and have immature fruit buds and green succulent roots which cause them to lose their ability to form fruit.



The Sample.

PHYSICAL CULTURE.

It is a rule of nature that any faculty or muscle which is never used will become atrophied or useless and that all development whether mental or



Nick Ohmer.

physical is the result of well directed exercise and this is by no means confined to animal life but is also shared by plants even in a larger degree.

Nothing is engaging the attention of the people at present more than physical development. The columns of our magazines and newspapers are filled with advertisements of all sorts of devices for developing the muscles, and athletics are now a part of the curriculum of all our schools and colleges.

Excessive muscular exercise is destructive and is to be guarded against, which is especially true of the organs of reproduction in plants as well as animals.

The ideal plant which we select for the mother plant is chosen to get the best variation in type and fruiting stamina. We prune off all the excessive buds and permit it to bear all the berries it can without exhaustion, just as the athlete under the constant care of his skilled trainer, performs feats of strength and thus continually builds up muscles and augments his power of endurance, but his trainer never allows him to do so much as to bring him near the danger line of exhaustion.

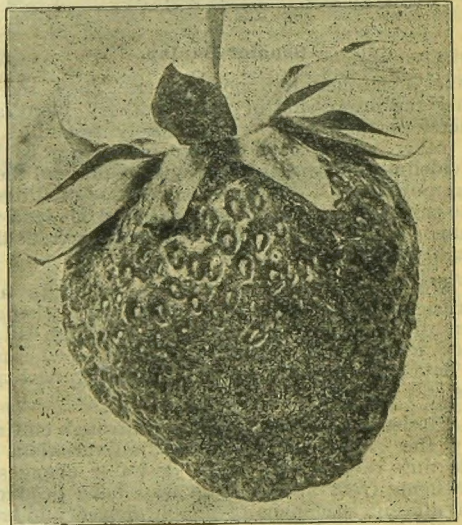
We have learned that a tree or plant which has had all its flowers removed through many generations will cease to bear flowers or fruit and will devote its energies to wood and node growth for multiplying its species.

Thus it is that the practice of taking scions from young trees in nursery rows through many generations before they have borne fruit have so degenerated fruit trees that crops have become generally so light that profitable apple growing is a thing of the past.

What was the origin of your work in breeding plants in this way?—My experience in this line dates back seventeen years when I commenced growing berries for market. I was greatly impressed with the wide difference in fruitage of my plants. Some producing many fine berries while others, by their side grew berries of an inferior quality. Careful examination convinced me that the secret lay in the physical condition of the plants. They had been taken from the edges of matted rows as was then the general custom. The theory being that a plant taken from a poor plant

is just as good as one from an extra good plant if well manured and cultivated, which we now know is not true.

How did you make the beginning?—The first thing to do was to fix in the mind the ideal type of the berry I wanted to produce and then go into the fruiting field to search for the plant that approached the nearest to it. In the spring when first set the search began. If the plant had an especial fine stocky foliage it was located by a stake and numbered, and every essential feature noted on a scale of one to ten. The next spring half the blossom buds were removed from each stem before they opened to prevent pollen exhaustion. When the fruit had set only one or two berries on each stem were allowed to mature to determine size, color, texture and flavor, and to encourage the habit of fruit formation by exercise in that direction. When all the berries were ripe and the scale of each number footed up we were able to determine definitely which plant possessed the greatest number of points of excellence and this was then selected to become the *mother plant* of all that variety on the farm.



Glenn Mary.

Its runners were carefully potted and transferred to a special propagating bed and given extra good culture to stimulate further good qualities in the runners which were allowed to form for our next year's planting.

From these, selections were made the next year for the ideal 'mother plant' and thus through all these years the Pedigree shows parentage of the best individual plant on the farm of that year kept in full fruiting vigor by restriction.

By this method every plant which declined in fruiting vigor or from any other cause was at once discarded.

The result of this practice under my system of the most thorough tillage was that the fruit on each plant rapidly improved in quality and quantity. At the beginning my crops averaged 75 to 100 bushels to the acre of commonly good fruit but under this method the yield rapidly increased until it reached from three to five hundred bushels of very superior berries.

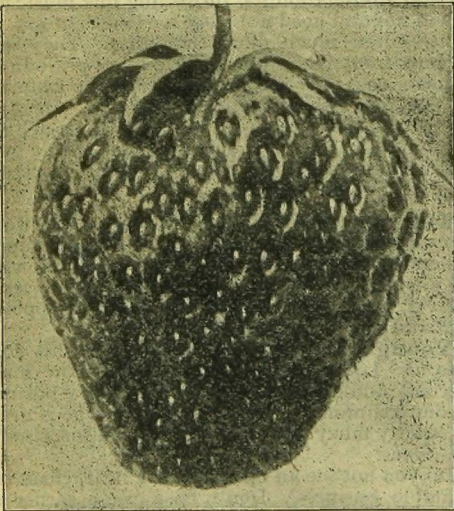
The fame of my fruit spread far and wide and secured for me special customers who engaged everything in advance at fancy prices.

The call for these plants became so great that I could not supply it with facilities I then had and I determined to provide myself with the most perfect conditions possible for improving and breeding them. The present grounds were selected after a search of many weeks throughout the great fruit belt of Western Michigan. The soil and location are ideal for the purpose being located on an elevated plain partly within the limits of the beautiful manufacturing city of Three Rivers.

It has been made practically virgin soil by heavy applications of stock yard manure and then plowing under leguminous plants to which were added liberal applications of bone phosphate so that the development of good qualities in the plants should be encouraged in all possible ways. It is not difficult to maintain quality after you get it built up to the proper standard.

On the testing grounds will be found all the most valuable new varieties of small fruits grown in this latitude growing under conditions to bring out their true value and best variations from which to secure the ideal mother plant for renewing each variety in my propagating beds.

This gives you the Pedigree of the plants we grow and send out to our customers, and a cordial invitation is extended to every one interested in fruit growing to visit our grounds whenever convenient to do so. The hacks which are always at the depot carry visitors to the farm at my expense and entertainment is free while you stay



Seaford.

THE AGRICULTURAL DEPARTMENT.

at Washington has been making experiments along this line and reported them in the year book for 1898, under the head of "Improvements of Plants by Selection" which fully confirms all the claim we have ever made. A special reprint has been issued for general distribution. Every fruit grower can get it free. Write to the Secretary of Agriculture, Washington, D. C., or to the Congressman from your district and ask him to procure it for you.

We have space for making only a few extracts. On page 372 it says:

"Some doubt has always existed as to whether plants normally propagated vegetatively by cuttings slips, buds, etc., could be improved or permanently modified by a selection of these parts from certain individuals or parts of individuals by methods similar to those used in seed propagated plants. Each joint of a plant with its bud and leaf attached, possesses in most cases the faculty of growing into a new plant much like the parent. These new plants vary the same under environmental influence as do individuals produced

from seed and while parts of the same seedling still they are in a physiological sense distinct, each possessing individual characteristics and constitutions depending on the conditions under which they were grown. As is well known even branches of the same tree may differ in many characteristics and while such variations are not commonly recognized when slight yet in certain cases they become very marked and then easily distinguished being known as "bud sports." Page 373 reads: "Every one who propagates plants by cuttings (or runners) knows that hardly any two of them possess exactly the same characters. Starting with two rooted cuttings from the same plant and growing them under as nearly the same conditions as possible one may give a plant that will bloom freely, forming flowers of large size and its leaf development may also be perfect while the other may be a vegetable runt, lacking in vigor of leaf and utterly unable to give anything but small and imperfect flowers." Page 357: "If such variations are desirable they may be perpetuated by budding or grafting." Page 355: "The unity of the individual taken as a whole is of prime importance in selecting and should be clearly recognized by every one in striving to secure Improved Pedigree Plants." Page 368: "Improvements effected by selecting a variation may be slight in one generation but as before explained if these slight improvements are continued year after year very marked improvements may result in the course of time."

"It is slow and patient care and selection day by day which permanently ameliorates and improves the vegetable world. Nature starts the work, man may complete it."

We cannot spare the space to quote further but the words Pedigree in plants and Pedigree in seeds and cuttings are fully endorsed and commended. Photograph illustrations are given to show the remarkable results obtained by the Department in continuously selecting the ideal plant both in seeds and buds for propagation. It concludes as follows: "Every farmer and horticulturist should devise for each crop a systematic method of selection that the general crop may be grown continuously from selected PEDIGREE STOCK. All common agricultural crops respond to skilful selection and in every case valuable results will doubtless reward the agriculturist's attention to this principle."

If you wish to investigate further along these lines send to MacMillan Publishing Co., 66 Fifth Ave., New York, and order the books entitled "Plant Breeding," "Survival of the Unlike," "Lessons with Plants," and "Evolution of Plants," by Prof. L. H. Bailey, Professor of Horticulture in Cornell University, and probably the most eminent horticultural writer and investigator of the present age.

THE PROPAGATING BED.

Every fruit grower should propagate his own plants as far as possible. He should grow them expressly for plants from the best strains obtainable. While there are few nurserymen or fruit growers who have facilities or experience which will enable them to select and breed up plants along the lines pointed out in this booklet yet he can for a very small sum procure enough of these thoroughbred plants to start a propagating bed and thus have them on the ground at the time needed for transplanting next year.

A loamy soil is the best. Make it moderately rich with barnyard manure. Set the plants in rows not less than four feet apart and 24 inches apart in the row. As soon as the plants are set spray them with Bordeaux Mixture to kill all spores of rust and fungi which may find a lodgment on them. An atomizer is the sprayer to use. Let the runners spread out in all directions and keep them layered by placing a small stone or clod of earth on them. They should be mulched in the fall as soon as the first freeze comes. You only need to shade them to keep the ground from thawing. When the ground is frozen deeply in mid-winter put on more light chaff or straw so as to hold the frost in the ground and keep the plants from starting until you get your ground fitted. If the plants are dormant when set every one is sure to grow. You may need to buy plants for this spring's setting but you should look a year ahead and grow the very best plants for future use. It surely will not pay you to use scrub plants when thoroughbred plants can be had at prices quoted on pages 32 to 34.

HIGHER PRICES FOR BERRIES.

Fine large berries always sell at sight for fancy prices to regular customers and now that money is plenty the demand will be greater than ever before.

Never in the history of America was labor so generally employed and so much money in the hands of the common people as at the present time. During the hard times farmers had hard work to make a living and berry growing having been very profitable they went into it largely. They knew nothing about the physical condition of plants as a factor in fruit growing and got their plants wherever they could get them cheapest and gave them poor tillage because they had other farm crops to care for at the same time. The result was that markets especially in the large cities were flooded with the poorest kind of berries. Add to this the fact that labor was not employed and money could not be had and we can readily see how it was that prices went to nothing.

Afterwards the price of general farm produce went up and these farmers returned to their regular work and plowed up their strawberry patches.

The present is a golden opportunity to start a small fruit plantation if conducted along the lines pointed out in this pamphlet. There is abundant room for such a business near every village and city. Our patrons are paying for their homes and acquiring a competence for old age and have built up a business they truly enjoy. See letters on page 36.

There is something fascinating and delightful about fancy fruit growing. First the field covered with blossoms, then the luscious fruit and last but not least the appreciation of the customers who buy it, and the full pocket book after the season closes.

I have often wondered if I really enjoyed the comfortable little fortune I have made in the berry business as much as the kindly expressions of a big line of customers, to whom I supplied fruit throughout the season.

HOW TO GET RICH.

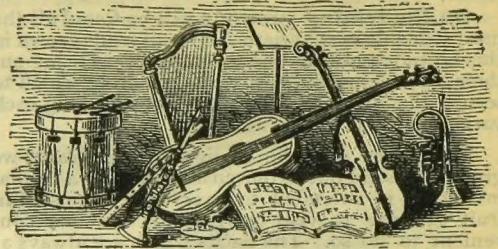
It is not difficult to get rich if you go about it in the right way. The rich fruit growers of to-day made their fortunes by never touching anything not capable of making money for them. They used the very best of everything and when they did a day's work they got large returns for it in the way of big prices while by their side were any number of people who are now and will ever remain poor just because they put their labor on plants which are unable to produce fruit and will make only big leaves and runners to pay for manure and tillage. You see such



Brandywine.

people all around you and perhaps you have been doing that very thing yourself. It costs but very little more to do a thing right and secure the greatest results for time, money and labor invested. If you do not have land, rent the best you can find, with the privilege of buying later on. Don't take very poor land at any price.

I have grown many crops that paid for the land manuring and the whole outfit and had money left. I am in a position to start you right and if you will consult the price list on page 32 you will see for how small a sum you can commence with thoroughbred plants from which you can propagate for setting a year hence, and can furnish you in large lots for your general field planting this spring which will save you a year's time in starting your plantation.



THE FIRST AND SECOND FIDDLER.

The first fiddler is a high-priced fellow. He has won a reputation for furnishing fine music and he will not and need not play for less than \$25 per night,—often much more than that. They send for him from far and near. He takes pride in his business, uses only the best fiddle to be obtained and never furnishes second-class music. He finds a world of pleasure in his business, has a delightful home and pleasant surroundings, with a good bank account, and looks at his whole life work as a magnificent entertainment.

The second fiddler, with which the world seems abundantly supplied, plays for his supper (generally the second table), and picks up such odd jobs as he can get a pittance for doing, lives in a hovel, wears poor clothes, and sees disappointment and gloom everywhere.

Young man, do you see a moral in this comparison? Look around you and see how many "second fiddlers" there are in the berry business in your community. Ask your grocer who is growing strictly fancy fruit and you will be surprised at his answer.

Do you not see an opening for a neat, clean and profitable business? Don't be a wage earner all your life, but get the best piece of land you can and stock it with thoroughbred plants and pitch in. Don't play second fiddle.

If there is anything you don't understand write me full particulars and my experience is at your service. It affords me a world of pleasure to give pointers and boost a young man into place as "first fiddler" in the berry business.

THE POOR MAN.

The very poor man is poor because he surrounds himself with a poor home, on poor soil, uses poor tools, poor seeds, poor plants, gives poor cultivation and always has a poor crop of poor fruit and sells to poor people who are contented to buy poor stuff if it's "cheap," and thus he remains always and eternally poor.



Manwell.

THE RICH MAN

gets rich because he gets the best soil, uses the best tools, sets the best plants which produce the best fruit and sells to the best people who will pay the best prices to get the best things. His customers are not slow to learn that he can be relied upon to furnish the best in the market and know they must pay him the highest price to secure his products. He becomes rich by getting a large profit on everything he touches and employs labor enough to do everything at the right time and in the right way and is always ahead with his work.

There is fast accumulating an army of fruit growers—formerly day laborers, living on a small and precarious income—who have by former editions of this booklet been led to see the profits of fancy fruit growing, and with its help have pushed to the front, rented land and afterwards bought and paid for it and are now free and independent. What the average young man needs is grit, push and “get-there-a-tiveness.”

You must have dash! First study the field to get your bearings and then throw your whole being into the charge. *Make it move.* If you are a lazy, good-for-nothing fellow and can't find pleasure in surrounding your home with comforts, and would not enjoy the approval of your neighbors by being somebody and doing something above the ordinary, then in all goodness don't change but tag along just as you are.

DOLLARS AND “SENSE.”

It is important that you comprehend the difference in profits between intensive fruit growing as taught in these pages and the common methods of the average fruit grower. Take one thousand bushels of berries as the basis of calculation for comparison.

The average crop under ordinary methods is from 50 to 75 bushels per acre, and so to produce the 1,000 bushels we must furnish and fit at least $13\frac{1}{3}$ acres of land. You must then buy and set 93,300 plants, (7,000 to the acre). The cost of picking and marketing berries grown in the old way is always greater because you must go over so much more land for the same amount of fruit, and on the market you must accept what the purchaser sees fit to pay. You cannot secure regular customers at an extra price for common fruit.

To produce one thousand bushels by these improved methods and basing calculations on my own experience I should not think of using over four acres of land, (250 bushels per acre) and should therefore have to purchase and set only 28,000 plants. My crops have rarely dropped as low as that and have exceeded five hundred bushels per acre. Now I should sell this fancy fruit at from three to five cents per quart more than the common fruit grown by the old method and can hold regular customers who are glad to get this grade of fruit at the advanced price

While it does cost some more work to give this intensive culture, yet the **extra price of \$960** received for the fruit would pay for the entire cost of plants, use of land, manuring, marketing, etc., and leave me more than the gross price of common fruit for net profits.

As these plants would be grown in hills or hedge row they would not become so much exhausted by seed or fruit bearing and would produce large crops for three or four years while by the old way the beds generally cease to be profitable after the second year and must be plowed under and re-set.

These comparisons are not exaggerated, for in this calculation I have taken the larger estimate of common crops—75 bu. per acre—and the smaller amount grown by the improved method—250 bushels per acre and the lowest per cent of gain on quality—3 cents per quart, which gives a very conservative comparison.

SHORT CHAPTER ON “DON'TS.”



Don't try to lift the whole world at once but only as much of it as will afford you profit and pleasure. Don't imagine you must have all the fancy tools to start with; you will be able to get them later. Any good farm tools will answer the purpose. Don't set any more plants than you can manure the ground for and cultivate thoroughly.

Don't forget that one acre of rich land set with Pedigree Plants and given thorough tillage will produce more clear profits than five acres of ordinary land set with scrub plants.

Don't forget that while many markets are glutted with poor fruits dealers find it exceedingly difficult to get really fine fruit and are hunting for the man who can produce it.

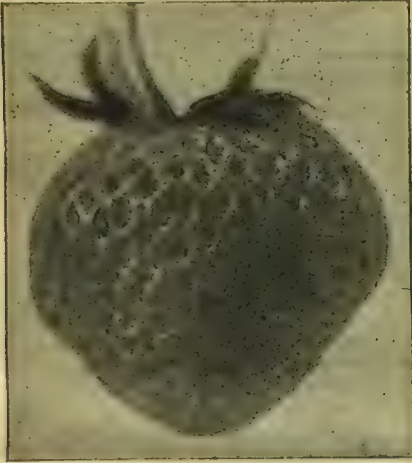
Don't forget that you can talk Pedigree Plants and high tillage to nine-tenths of the fruit growers till Doomsday and they will keep right on in the old ruts traveled in by their fathers and grandfathers and use scrub plants and give poor tillage and thus leave the profits to the “up-to-date fruit grower.”

AN IMPORTANT QUESTION.

The question sometimes arises whether a “Pedigree Plant,” with its high breeding and culture, will succeed on ordinary land with common cultivation, as well as common plants?

We might answer this question by asking another. Would a perfectly sound horse, which had been bred up carefully from the days of his coltship, be as valuable and pull as large a load as a broken-winded, ring-boned and spavined stager? Pedigree Plants, being possessed of a strong constitutional vigor, will adapt themselves to changed conditions much better than scrub plants.

Climatic Conditions will always be a factor in fruit growing and may defeat the best laid plans, but since I commenced breeding up plants seventeen years ago I never lost a crop nor had an unprofitable season.



Cobden Queen.

THE FRUIT GARDEN.

I pity the mother of a family who has to prepare 1095 meals every year with resources limited to the pork barrel, potato bin and bread tray. If she could only step into a fruit garden and find an abundance of asparagus for the next month, and then raspberries, blackberries and grapes in succession until frost comes, giving a feast all summer long, with canned fruits in abundance for the long winter months, the whole question of what to get for a meal would be solved.

The way to the husband's affections and that of the children is right down through the stomach. Fruit eaters are always good natured. A fruit diet during hot weather means a clear head and strong body. The rich fruit acids cool the blood and are the great panacea for aches, pains and the "blues." It saves "family jars," doctors' bills, and enables a person to accomplish more work. It will keep the boys and girls contented at home. They see all these nice things in the town and forget they are products of the farm. Nothing adds so much to home life as a fruit garden.

A small plat of ground, a few strong fruiting Pedigree plants of early, medium and late varieties, a little delightful recreation in the cool of the evening in caring for them and the pleasure is yours. To enjoy them you must see them growing. To see the great beauties begin to turn red and peep out from under the foliage so coquettishly is a great treat.

"Buy them cheaper?"—Let us see about that. You furnish the land and manure and I can buy the plants and do all the work, paying regular wages, and have the berries ready to pick for much

less than one cent per quart throughout the season. They will be at your door. No going without because you have no time to go after them. No expense for boxes except what the children need to pick and take to town to buy their school books with. A berry garden will furnish the family more real luxury than you can buy with several acres of wheat. Give it a start this spring.

Farm for sale?—The way to sell a farm is to make the would-be purchaser feel that he would like to own it. A display of fruits will contribute more to that end than any other one thing. The cost is trifling compared with inducements to purchase.

BEAUTIFUL BERRIES.

The most beautiful berries are true to type, above medium and all of the same size. That is the advantage of pedigree plants. Their vigor enables them to bring their berries to the full size of their variety. Some excessively large berries are needed for advertising purposes to get people to talking about you, but the average family prefers above medium in size, good texture and rich flavor, hence the successful grower plants most largely of the medium sized varieties, and then gives careful culture to make them all grow large. These are the money makers.



HOW TO SELL FRUIT.

Never give the market a thought until the berries are ready, but spend your time growing such a grade of fruit that customers will wait for your coming. You will not have to run around to drum up trade.

If your fruit is right you will not have any trouble in arranging with the leading dealer to handle all you have. Get a neat circular letter printed describing your berries and have one left with every family who is a customer of your dealer, telling them where they can be had. Have notices put in the papers to the same effect. Our "squib" was generally one line: "To be happy eat Kellogg's berries, sold at Wilson's." Put this in the paper in a dozen places. Of course it costs a little, but it sets everybody to thinking of you, and the extra price and ready sale meets all the bills, and you are ahead in the end. The mere fact that this will bring the dealer a large amount of extra trade will make him glad to pay you all there is in it to secure the agency.

Pack your fruit honestly in a nice clean box and don't forget to put some big berries in the bottom. The people will find them and give you a good deal of credit. If you ship to a distant city secure a reliable dealer in the same way and have a neat stencil or label which shall act as a trademark so that people will become accustomed to it and insist on having your brand.

You will have no occasion to make consignments to a commission house but will be put to your wits' end to get enough fruit to supply regular customers.

If you are so unfortunate as to have common fruit, do as the other fellow does: sell it for what it will bring but never put your name on it so that people shall find out that it came from your establishment. A good reputation is a splendid stock in trade. It gives you the advantage on the market and causes people to pass by the other growers and patronize you.



Haverland.

Have a neat letter head and bill head to use when you have occasion to write a customer or present a bill. Take pride in your business and do business in a business-like way.

SELL DIRECT TO FAMILIES.

I have made most money selling direct to private families. I never failed to secure for customers nearly every family on all the principal streets. Other growers would tag around after me and offer my customers their berries for two or three cents less per quart but I paid no attention to them.

Always insist on a fair price and back it up by a comparison of values and you will have no trouble in getting and holding customers. Be firm and courteous under all circumstances; don't get angry if they do quit you, but express your regrets and leave them in a mood in which they can come back without prejudice. It costs nothing and it is pleasant to be known as a gentleman with whom everybody likes to deal. Don't cut prices but look up new customers if you have a surplus of fruit. Don't peddle indiscriminately from house to house but have regular customers whom you supply daily.

Furnish each family with a ticket printed on manila card board, about three inches wide and eight inches long, to be hung in a convenient place by the kitchen door where it can be found without delay. This prevents all bickering and dispute about price of berries purchased. It saves making change and loss of sales besides ladies do not always have change. It suits the "man of the house" because it furnishes a voucher as to correctness of bill. The family will buy double the fruit when this ticket is used and it assists in holding the customer. Insist on pay every week except when bill is to be presented at the store or office of customer at close of season.

The following is the form of the ticket:

DON'T FORGET TO BRING THIS CARD.

TIME IS PRECIOUS.

When you hear our bell ring kindly HAVE THIS CARD READY AND BE AT THE DOOR so we can make the proper entry and deliver the fruit with as little delay as possible. Payment expected every Monday.

M.

In Acconto with R. M. KELLOGG.

Date.	Quarts Wanted.	KIND.	Dr.	Cr.

When I commenced selling berries in this way my customers took one or two quarts the first day, but very soon increased to three or four quarts and often more. The berries were so large and delicious they not only insisted on having them at every meal but the dishes had to be refilled and this made the quarts disappear very fast.

Insist on a good price for fancy fruit and you will always get it. You will rarely or never lose a customer but you will keep on getting more patronage as the quality of your fruit becomes known. Nine-tenths of the people will buy the best fruit they can get, and a reasonably high price cuts no figure if they can only know where to get a regular supply. Any groceryman will tell you he always sells his fancy fruit first and the low grades last.

The word goes from one family to another and to their friends in distant towns, where families will club together and have several bushels shipped daily by express and divide them among themselves. I have always had a large trade of this kind.

When selling one kind of fruit engage the next coming on, so as to have everything sold in advance. You will soon find all your time occupied in selling fruit and directing work, and you can hire the drudgery done by people of less enterprise.

Pay your men good wages, so they will prize their places, but let them understand that everything depends on first-class, careful work. When they see the drones being weeded out they will take the hint; and don't forget the worst use you can make of a man is to quarrel with him and call him hard names. Just say to him kindly that his services are no longer needed, and let him go.

A neat personal appearance is a good stock in trade. Wear a good business suit and keep your shoes blacked, and be in condition to approach a wealthy family and make a good impression, and never offer a customer berries in an old dirty box. Keep your wagon as neat and attractive as possible.

SELECTING A SITE.

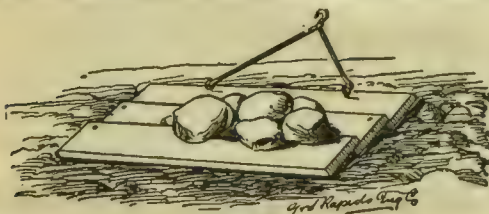
I do not care to spend much time on this subject. Everybody knows good land when he sees it. How would it do for a garden? Hard flinty clay or light, drifting sand are bad. A light clay or sandy loam are best. Stony land is good if it does not interfere with cultivation. Cold springy land is bad. High land, that is, land which is higher than any in the immediate vicinity, is best. Cold air runs off the hills onto low land precisely

the same as water, so that a low piece of ground with high land all around it should not be selected. Level land with no high hills near it will do. A south incline matures fruit early and a north incline makes the same variety later.

MANURING THE GROUND.

Stable manure is the best. I should prefer to have it well rotted, but that cannot always be had. Get the best you can find, even if you have to draw it as fast as made. Spread it evenly over the ground during the winter and early spring. Do not put in piles. The deep snow is no objection to spreading. The winter and spring rains will wash the juices into the ground so it will be incorporated with the soil where the plants can use it. Before plowing rake off all coarse straw so that capillary attraction which draws water from the lower subsoil shall not be cut off. Water will not pass up through a mass of straw if plowed under. **Be very careful** about this. If you can't get stable manure apply broadcast from 400 to 800 pounds of pure, fine ground raw bone meal and not over fifty bushels per acre of unleached hardwood ashes and cultivate in before plowing. If commercial fertilizers are used select those rich in potash and phosphoric acid which are always conducive to fruit formation.

The Roller.—You cannot properly fit land without a roller or floater. The plow and harrow leave the ground too loose and do not sufficiently exclude free air and capillary action will not bring the water up from below. The particles of earth must be brought near together. If you do not have a roller, take three two-inch planks about seven feet long and one foot wide; bolt or spike the edges together like the siding on a house, and hitch a chain to each end and load it with as much stone as the team can draw, and go over the surface. On many soils it will do better work than a roller. **Do not attempt to set plants in loose earth.**



The Floater.

HOW PLANTS FEED.

About ninety-five per cent of the substance of plants by weight comes from the atmosphere and only five per cent from the soil. There are about sixty ingredients in the soil which plants use but they get along very well if only sixteen of them are present. These ingredients are found in abundance in all friable soils, except potash, phosphoric acid and nitrogen, which must be replenished by manure.

These foods must be dissolved in the soil water and are sucked up by the little hair roots and passed from cell to cell through the center of the plant to the leaves by a peculiar force known as osmosis. The leaves are the stomach and lungs of the plant and they digest the food by breathing the water away through little mouths on the under side of the leaves called stomatas and at the same time they take in carbonic acid gas from the air and combine it with the soil foods and this digested mass then passes out of the leaves under the bark,



Carrie.

building up the little cells in the plant and fruit, which constitutes the growth.

This process in digestion can only take place in sunlight, so plants cannot grow and produce fruit unless they have plenty of light and air. They soon turn pale and die in the dark.

For this reason we must set all plants far enough apart for the sunshine to reach every leaf and fruit bud. The leaves of a strawberry plant naturally droop over so that the sun shines on the crown and therefore they must not be allowed to mat so thickly as to shut out the light.

WHY WE PLOW.

We have shown that plants take their soil foods dissolved in water. If all the plant foods in the ground were soluble and available at one time, the rains would wash them all out and the land would soon become barren. It would do very little good to apply manure because it would be lost before the plants could use it.

Nature has provided for this by making a chemical change in the foods and they become insoluble in water, at the same time a solvent was provided to make them available as fast as the plants could use them, and this "solvent" is the oxygen of the air. When we plow, harrow and roll to crush lumps, it not only opens the ground so it will hold more water, but the oxygen comes in contact with the soil grains just before the plants are set and they can then get plenty of food and will grow very fast.

No matter how vigorous your plants may be they will not produce large crops of fruit unless they can have food and moisture, and this can only be secured by thoroughly manuring and preparing the soil.

Subsoiling is to follow the common plow with one which only breaks up and pulverizes the lower strata and leaves it at the bottom of the furrow. This subsoil must not be brought to the surface, as it contains but little plant food. By breaking it up we actually create a reservoir of water under the plants which draws up by capillary action to



Photograph of our employees. No boys and no careless men; all are under perfect discipline and a responsible foreman at the head of each division insures accurate work.

WHY WE SUBSOIL.

tide them over the drouthy season. The soil grains being separated they will surround themselves with a thicker film of water. As an illustration put some small gravel stones on a wet cloth and see the water pass up and quickly cover them and remain so as long as the cloth is wet.

Sometimes when the ground has been plowed the same depth for a number of years the bottom of the furrows becomes glazed and baked so hard the water cannot settle through it or come up from below by capillary action and when heavy rains come the plants are drowned out and during a drouth can get no water from the subsoil, all of which is remedied by subsoiling.

Some soils are injured by subsoiling, as a waxy clay or gumbo soil, which, when very wet will run together in a solid mass. Earth worms tunnel such soils and keep them porous and it is better not to disturb them. A loose gravel or light sand is already as loose as it should be to secure capillary action and will be injured by making it looser.

A composition of sand, gravel and clay or what is called "hard-pan" or any soil so dense you cannot dig it up with the hands would be very greatly benefitted by breaking it up. I urge subsoiling wherever the conditions permit it. It should always be done very early in the spring so the rains will fill the "reservoir" before the drouth sets in.

WHY WE CULTIVATE.

We cultivate to destroy weeds, prevent the ground from drying out and to admit the air to the soil so as to keep the plant food soluble. Having properly prepared the ground in the spring the air will find its way through the soil if you prevent a crust from forming on the surface. We want plenty of root pasturage for the plants and so we must not stir the ground more than two inches deep to break the crust and keep the surface covered with the loose earth mulch, so the water cannot rise to the surface to be carried off by the sun and the wind. **CULTIVATION DOES NOT ADD** any water to the soil but prevents that already there from getting away.

Water is moved in the soil by two forces. Gravitation pulls it down into the ground and capillary attraction draws it up to the surface again. Capillary means a hair-like tube or passage. The irregular shaped soil grains have a minute passage around them and the molecular force causes the water to come up through these hair-like openings just as the oil flows up through the wick of a lamp. The water will not rise in this way unless the soil grains are very close

together. Now when we cultivate about two inches deep we make the surface so loose that while water draws up above the roots which are in



the firmer soil it must stop as soon as it reaches the loose earth, because capillarity is overcome by gravitation and the water must stay below for the use of the plants.

When the lower strata of the soil is quite wet as it generally is in the early spring, the water will draw up fast and the soil gradually settle down by having the soil particles slip around and adjust themselves close together and the water draws up to the surface so the hot sun and wind will carry it off just as the flame of a lamp burns the oil as fast as it rises in the wick, and for this reason we must cultivate more frequently when the lower strata is wet than later in the season when it is dry. It is a great mistake to suppose we must not cultivate until the ground gets dry. We cultivate every week to prevent the soil from getting dry, and always after every rain.

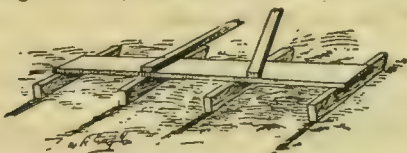
You do not need irrigation to produce the finest fruit. Grow your berries in hedge row or in hills and maintain the dust mulch the first season and mulch in the fall with straw and let it remain on in the spring to keep the berries clean and to hold the water down until after the berries are picked and then burn it off and cultivate as described on another page. In the spring we cultivate every week and oftener during a drouth on spring set plants.

Marking off the ground.—Have your ground properly firmed, leveled and rolled so the perfection plant setter will set the plant exactly the right depth, or if you use the dibble or spade you can determine quickly the right depth for setting plants. Mark as light as possible where the rows are to be. For this purpose we take a board about one-half inch thick, eight or ten inches wide and long enough to mark four rows at a time. Make four short sled runners and nail them under the



Photograph of section of hedge row culture in our experimental garden.

board the distance the rows are to be apart, and nail shafts or handles on the top to draw it with. A man can draw it all day without fatigue. The object of using a thin board is to make it bend and accommodate itself to the uneven surface of the ground. Get the first row perfectly straight and let one runner go in the last mark as a guide. This will make all the rows exactly so far apart, so that late in the season when your plants get larger you can adjust the cultivator so as to do thorough work by going once in the row.



The Marker

There are four methods of growing strawberries: The hill or single plants, the hedge row, half matted row and full matted row.

HILL CULTURE.

Hill culture may be defined as a method of consolidating many small plants into one very large plant and many small berries into one large berry. As a rule, when you cut off a runner and check the plant from multiplying itself in that way, it will, if in full vigor, then try to multiply itself by seeds or fruit and proceed to form a new crown and fruit buds and in this way will build itself up to immense proportions. We have often had plants so large a bushel basket could not be placed over them without doubling up the leaves, and they will produce from two to four quarts of very large, high flavored and bright colored berries to the plant.

The conditions for hill culture are that plants must be in strong fruiting vigor. Common plants will not stool up but make too many runners and add to the work of keeping them off. The soil must be very rich and high culture given. Do not try to grow in hills on poor ground.

Set plants in rows 30 inches apart and 18 inches apart in the row or 30x30 and cultivate both ways; cut runners before they make leaves or have a chance to strike root. The runners are kept off throughout the season.

THE HEDGE ROW.

The hedge row gives very nearly as good results as hill culture and involves less labor. The plants are set in rows from 30 to 36 inches apart and 20 to 30 inches in the row. Those making runners freely the latter distance. The first runners should be thrown around so as to fill the rows in a straight line and let the plants stand six to eight inches apart and then all later runners are cut off very fast with the rolling runner cutter, which can be readily attached to the cultivator, but we prefer to attach it to a garden wheel hoe or any one can easily make a wooden wheel and frame which would answer the purpose well. The



Hill Culture—four quart plant.

runner cutter is a steel disk ten inches in diameter with leaf guard and out rigger for attaching it to the cultivator. Price \$1.75.

The advantages of growing in hills and hedge row are that each plant has plenty of light with space between the rows for abundant root pasturage. Nearly the entire surface can be stirred with the cultivator and kept covered with the loose earth mulch so plants are never injured by drouth and all weeds destroyed with the least possible amount of handwork, and cutting runners with the wheel requires very little time.

When the runners are cut the plant not only makes new crowns and buds but it makes more roots and sends them down deep and far out in search of food to bring their great berries to perfection.

The plants produce heavy crops for several years without re-setting because they have plenty of roots to sustain them. There are no more seeds in a large berry than in a small one and in this way nearly every berry grows to a large size so that they are picked as soon as ripe; and as there are only comparatively few seeds maturing at any one time exhaustion in seed bearing is in a great measure prevented; and thus the bed can be fruited three or four years without re-setting



Excelsior.

THE FULL MATTED ROW.

Probably three-fourths of all strawberries are grown in this way, but progressive fruit growers are fast finding out that it is a mistake. It is only justifiable when the land is too poor to grow them in other ways. Make rows four feet apart and set plants 18 to 24 inches in the row. Let the cultivator go in the same direction every time so as to throw the runners around without tangling them and as they root narrow up the cultivator.

The objections to the the full matted row are that when the row is full a strip of ground some twenty inches wide is left which cannot be cultivated. The crust forms over this excluding the air from the roots and soil and the water draws up to the surface so the roots are dried out and injured. If the top of the ground is dry the runners will not send down their roots but continue to live on the mother plant, forming several plants on the same runner which blows around in the wind and does not take root until the fall rains come, and then it has no time to make and perfect its fruit buds and roots and so the next season cannot bring its berries to full size and maturity.

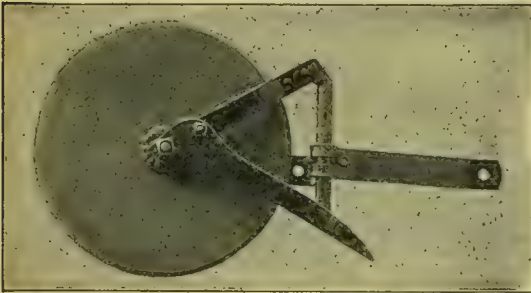
If the ground is rich the plants will mat so thickly that sunlight is excluded from the lower foliage and the crowns. Fruit buds which will not form in dense shade will be lacking. Many of the berries are too small to pick and rot on the vines and sap the vitality of the plant, thus preventing the better berries from growing to full size.

I urge all my customers who want to make a reputation for growing fine, large, even sized, beautiful berries to adopt the first two methods.

SETTING PLANTS.

The great point is to have the roots straight and separated from each other and imbedded in soft mellow earth so that new feeding roots can start out in every direction without any hindrance and thus secure a vigorous growth at once.

The spade is quite generally used, but in the hands of a careless man it is about the most villainous tool ever used for the purpose. The first objection is that when forced into the ground, moved back and forth and sideways it makes a glazed surface and when closed by the foot in the ordinary



Rolling Runner Cutter and Leaf Guard.

THE HALF MATTED ROW.

This is the next best way to grow berries. Make rows three and one-half feet apart and set plants 18 to 24 inches in the row according to variety and fertility of soil. Keep off all runners until about the first of July so as to subdue weeds and get plants well established. Then let runners start and form a row one foot wide and after this use the rolling runner cutter and clip off all runners at fast as they come out into the alley taking care not to let plants set closer than eight to ten inches apart. You will then have a large beautiful row in the fall.

We have for sale Plant Setters and Rolling Runner Cutters.



Runner Cutter on Cultivator.

way incases the roots in a veritable pocket and if dry weather follows the glazed surface will dry out and no feeding root can penetrate it. Dig a plant up a week afterwards and find the little white root-lets tracing up and down the old root to find a crack in this "plastered wall" through which they can penetrate to the mellow soil just beyond. No good growth can be had under such circumstances. If the ground be moderately loamy or clay the weight of a man will not close the bottom of the cavity.

Set a plant and step on it in the usual way and then dig down by the side of it and see how many "rat homes" you will find with roots hanging in the free open air. You will be surprised to find that often more than half are exposed. Another objection is that the lower ends of roots are buried too deep. The roots of a plant spread out in all directions and coming near the surface feel the warmth of the sun and send out feeders much sooner. Notice the natural tendency in roots to run near the surface when taking them up in propagating bed.



The Wrong Way.



A "Rat Home."
(Bottom of hole not closed.)

Use the spade this way.—Let a man go ahead of the setter, force the spade straight down two-thirds the length of the blade, then draw the handle towards him about ten inches, force one inch deeper, push from him far enough to make the earth stay and withdraw the spade, thus leaving the opening so the bottom is easily closed. Quickly insert the hand, rub off the glazed surface and take a few roots from one side of the plant, holding crown in left hand, deftly drag the roots sideways into the opening and when all spread out evenly and center of crown just even with surface of ground, quickly fill the cavity, piling the earth so that when stepped on it will be perfectly level around the plant.

If the crowns are too low they will rot or make a feeble growth. If too high the upper roots will be exposed to wind and die. The new roots always start from above the old ones and if the plant is not in the ground deep enough they will not start. (See engravings.) If a little too deep new crowns will not start on the side of the plant, and if a little too high it will make only a feeble growth. I urge great care in doing this work.



Too Deep.



Too Shallow

Leaving the ground without cultivation for a few days in a dry time kills and stunts more plants than any other negligence you are liable to



Clyde.

commit. To have a boy drop plants ahead of the setter, often leaving them five minutes in the bright sun and drying winds is sure death or permanent injury. Don't do it. Put a piece of manila paper in the bottom of a basket and pour in a quart of water and then open the bunches of plants and set the roots in it and take them out as needed. Do not let them stand in water only a few minutes before setting as they become soaked and injured. If the weather is cloudy and roots moist do not wet them at all.

The most perfect tool ever invented for this purpose is the perfection plant setter. It digs the hole, leaving in the center a cone. It is set with a gauge so it can be neither too deep nor too shallow. Take the plant by the crown and hold the roots upside down, giving it a slight quick jerk and roots will fall over the hand when you can quickly turn it over the cone and the roots will arrange themselves evenly around it. Then the dirt is quickly brushed back into the opening and firmed. The cone comes clear up under the center of the crown, the bottom of cone being about five inches in diameter and the roots so distributed there can be no tangled mass, as it gives a circumference and immediate root pasturage of over 15 inches.



Set with the "Cone Maker."

The perfection plant setter does the work faster than any other machine that will do it equally well.

The only requirements are that the ground shall be properly fitted by rolling and free from sod, straw, or anything which would gather on the edges of the blades in quantities so as to tear the cone to pieces. Small stones do not interfere if not too many. Price of setter, \$3.50.

An absolute necessity.—I wish to impress the necessity of loosening the earth around the plant by cultivating *immediately* after plants are set so that capillary action will bring the water up above the roots and collect under the loose earth or dust mulch and nourish the plant during the trying ordeal of trans-planting and becoming established. Where you step around the plant to firm it about the roots you have left the particles so close together that the water draws up to the surface with great rapidity to be carried off with sun and wind. I do not wait a single hour after plants are set before cultivating.



Spraying our Propagating Beds.

All raspberries, blackberries, strawberries and other fruits are thoroughly sprayed. No fungi, no disease, no insects.

PICKING BLOSSOMS.

It is of the utmost importance that blossoms be removed on spring set plants as soon as the buds start. The production of pollen or receiving fluid of the pistil is the most devitalizing and exhaustive process the plant is ever called upon to perform.

They form all their fruit buds in the fall ready to bloom out on the first warm days of spring. We then take them up for transplanting and before they can make roots to sustain them the devitalizing process begins and is sure to lessen fruiting vigor. We are always very particular about this. It will retard the growth all summer, and greatly shorten next season's crop of fruit.

INSECTS.

The only insect likely to do serious damage in strawberries is the white grub or larvæ of the May beetle. The larvæ feed on the roots of old grass and are often found so thick in old June grass sod or pasture as to destroy it. They are passionately fond of strawberry roots and great care should be exercised not to set plants on ground infested with them. They remain in this larval state for two or three years, doing the most damage the second season.

Grubs similar to these are often found in manure and old wood, but that kind does not eat roots and is therefore harmless. As there are so many kinds it will be safer to send some of those found in your ground to the entomologist at your State Agricultural College and ascertain if they are the true May beetle. They can be sent by mail. They very rarely or never lay their eggs in fresh cultivated ground so that if the land has been in any hoed crop for one or two years previous there will be no danger. Examine old strawberry beds carefully before resetting.

SPRAYING.

All blight and rust are of a fungus growth. Strawberry rust or leaf blight has been the worst scourge growers have ever had to contend with. It

is widely spread throughout the country. It multiplies by means of spores which are carried on the leaves and during unfavorable weather, especially when showers are followed by bright sunshine it spreads very fast. The foliage of most of our heavy fruiting varieties are especially sensitive to it. It is safe to say there are no plants in the country free from this scourge unless they have been sprayed and these spores destroyed. I am confident if the propagating bed is thoroughly sprayed during the summer with Bordeaux Mixture that the spores will be so far destroyed that rust cannot manifest itself on plants when they come into fruiting. A plant with its leaves covered with this fungus cannot digest its food so as to mature fruit. The leaves are the digestive organs of the plant and if diseased or injured the plant can make no growth.

It is settled definitely that no fungi (rust) can live when it comes in contact with copper sulphate—Bordeaux Mixture.

We use the Eclipse sprayer, made by Morrill & Morley, Benton Harbor, Mich. It covers every leaf with the finest mist so that no spores of fungi or insects can escape.

The new atomizer which can be had at any hardware store for \$1.25 or of Morrill & Morley is a hand machine of great value and very cheap. It is sufficient for the propagating bed and can be used on quite a large area.

For spraying raspberries, blackberries and other bush fruits large wheels are put on the cart so it can pass over the row. One nozzle shoots the spray down on the top while one on each side sends it against and under every leaf. A high pressure on the pump puts on the finest mist. It is easy to advertise healthy plants free from fungi but they cannot be furnished unless sprayed.

The State Inspector visited our grounds last fall and after carefully examining all the different



Irrigating the Propagating Beds—Perfect Conditions Produce Perfect Plants.

varieties of plants paid the nursery a high compliment on the general vigor and purity of stock and issued the following certificate, a duplicate of which is put on all the packages sent out.

CERTIFICATE OF NURSERY INSPECTION.

No. 27.

THREE RIVERS, MICH., Oct. 18, 1900.

This is to certify that I have examined the nursery, stock and premises of R. M. Kellogg and find no indications of the presence of any dangerous insect, pest or fungus disease.

(Signed)

D. W. TRINE,

State Inspector of Nurseries and Orchards.

IRRIGATION.

The largest crops and finest fruit we ever grew were produced without irrigation by holding the rains of winter and spring in the ground by frequent surface tillage and mulching quite heavily between the rows in winter which prevented evaporation the next season until after fruit was picked, but here our work requires new conditions. We are breeding plants with the view of improving their physical condition and they must be allowed to spread all over the ground and not be thrown around in a mat by the cultivator but each must have its own root pasturage and sunlight to develop the fruit forming habit.

This can readily be accomplished by the fruit grower who has only a small plat and propagates from plants already bred to the highest standard. The dust mulch is easily maintained by the garden hoe but here we are striving to produce the best "Mother Plants" in the world, and we are going to accomplish it. It is now and shall continue to be the headquarters of fruit growers in this line.

The present season was moderately wet until the middle of August when a severe drouth set in. Our irrigating pump was started and the right degree of moisture was maintained until fall rains came so that we are able to send out the largest

and best rooted plants we have ever grown.

Every plant is not only a thoroughbred but its best qualities have been fully developed by growing it under the very best conditions.

Our plant consists of a No. 6 centrifugal pump with a rated maximum capacity of 1400 gallons per minute, made by the Morris Machine Works, Baldwinsville, New York. The power is furnished by a twenty-five horse power gasoline engine, made by Olds & Son, with works at Lansing and Detroit, Mich. It is the most simple and perfect engine made. Needs little attention further than starting and stopping. The water is carried through a large cast iron pipe twelve hundred feet to near the center of the farm, hydrants being conveniently located and from these the water is carried through a ten inch hose made of heavy cotton duck to the sluice boxes as seen in the engraving.

These sluice boxes are made of three boards each twelve inches wide and sixteen feet long so that one fits into the other making a continuous trough.

They have gates and slides for the regulation of the flow of water which is let out from openings in the sides into small deep ditches made with a special plow for the purpose. The water soaks down deep from the bottom of these little ditches and as soon as they dry off the cultivator goes over it and holds the water from coming up. It then percolates out through the soil and raises, by capillarity until it reaches the loose earth where the evaporation is stopped, holding the soil sufficiently moist so the plants are well fed.

Great care is exercised to prevent flooding as that would pack the surface and then it would dry out very fast.

About two thousand barrels to the acre is applied at one time which will last about ten days.



A Perfectly Equipped Packing House.

No plant exposed. No plant neglected. Perfect discipline and training in employees with perfect facilities gets plants to customers in perfect condition.

It only requires two men to place the sluice boxes as they are drawn on low wheeled wagons to the points needed while one man regulates the flow of water. Thus rain or no rain, our plants are always in prime shape. No drouth nor fungi, but only the ideal conditions required for rapid and healthy growth.

MULCHING.

After the first freeze in the fall our propagating beds are carefully covered with straw where they remain frozen and dormant until the frost comes out in March when the digging commences.

DIGGING THE PLANTS.

The straw is removed and old leaves and stems are picked off in the row because there is no danger of injuring the crowns in doing it then. A six-tined fork is inserted under the plant and it is lifted in such a way that no roots are broken nor crowns bruised. They are instantly picked up and put in a wet bag, so they are never exposed to sun and wind and the bag is carefully labeled and sent immediately to the packing house where they are cleaned, counted, tied in bunches, labeled and the orders are made up.

The entire row is taken up and all old plants and any with immature roots are thrown out. Only perfect plants are sent to customers.

THE PACKING HOUSE.

Our packing house was planned and built to give the very best facilities for making up orders, packing plants and getting them to purchasers in the most perfect condition. It is 42x130 feet and each variety has its own separate stall where the plants

are counted and tied in bunches and labeled, so it is impossible to mix varieties.

The atmosphere of the room is kept cold and damp by the floor being saturated with water so that in the short time used in counting plants and making up orders the roots never show the slightest dryness. The crates for packing are made of tough, light wood, after our own design so that leaves are exposed to air while the roots are imbedded in pure, damp sphagnum moss and grow while on their way to their destination and arrive at any point between the Atlantic and Pacific Oceans in perfect condition.

Our men have become experts in packing and each department is under an experienced foreman and all under an efficient superintendent of many years' experience, so that all orders are filled with the utmost precision. It is absolutely impossible to dig and pack plants in the open field, exposed to sun and wind, as is very generally done by plant growers, and have them reach the purchaser fresh and vigorous. You want every plant to grow and have no vacancy in the field and there will be none with these plants if you set them properly.

MAKE PLANTS HAPPY.

If you want to make your plants do great things for you, you must make them comfortable and happy and keep them up to the highest standard and if from any cause you find them declining in vitality, plow them under and give their place to new vigorous plants, capable of responding to your generous treatment.

I never go to a "hoss" race or ball play because I had rather spend that time fussing with the plants. To hoe and cultivate them and study their individuality is not hard work because I never tire of it. It is genuine pleasure.



Aroma.

PLANTS FOR THE SOUTH.

All of the leading truck and berry growers in the south use only northern grown seeds and plants for the reason that the northern summers are very short and hot and they acquire the habit of ripening their fruit several days earlier than the same variety propagated at the south.

The new runners will retain these characteristics for three or four years so that southern planters can get the benefit of this and propagate their own plants for that length of time and then renew their propagating beds with northern plants and thus be in the market several days in advance and secure the high prices, making a big difference in profits with very little extra expense.

The spring at the north being later than the south, plants remain entirely dormant that much longer and will endure shipment and transplanting in this condition with perfect safety and when put in the warm soil will spring into a fine growth at once. The old foliage of dormant plants is nearly all removed by trimming and packing and the new roots start immediately so the plant becomes established with feeding roots before it has foliage to be affected by the sun.

We take up the plants as soon as frost is out of the ground—usually about the middle of March.

Northern growers cannot use southern plants successfully because they are in fruit in the south before ground in the north can be fitted for transplanting. While dormant plants can be kept even weeks in mild weather by heeling in, yet, after they have commenced to grow, it is difficult to save them in this way.

From points as far south as Maryland and Kentucky they are obliged to ship as early as February and March and even then plants have commenced to grow, so it is almost impossible to heel them in so as to keep them during the freezing weather of those months at the north. If shipments were delayed until northern ground could be fitted, the fruit would be half grown and at this period there is a change in the roots so that they very rarely succeed when transplanted at that time.

FALL SETTING OF PLANTS.

We wish it distinctly understood that we will not furnish plants for summer and fall setting at any price. People have sent here for plants in the fall, giving them no time to establish themselves

and form fruit buds and roots. In the spring blossoms start at once, taxing the resources of the plant to exhaustion because of lack of rootage, and the berries secured so deplete the vitality of the plant that only a moderate crop can be secured the following year, thus injuring my reputation as a breeder of thoroughbred plants.

The value of Pedigree Plants is in the potency of their pollen and general ability to develop fruit and I must insist that they shall have a fair chance to demonstrate their good qualities; for this reason we have decided to furnish plants only for spring setting.

Investigation has shown that when these Pedigree Plants have failed to produce great results it is because of bad handling, neglect, or lack of soil conditions necessary to enable them to do their work.

CARE OF AN OLD BED.

Plants grown in hills or hedge row will fruit heavily three or four years if good culture be given them and fertility is maintained. As soon as fruit is picked stir up the straw and get it dry and burn it off to kill insects and fungi and cultivate at once. The crowns of plants grown in this way being so prominent it is safer not to put much straw directly on the plants for burning.

The full matted row should have the tops mowed off, not too close, and mulch stirred up so it will dry off and then wait for a high wind so the fire will pass over rapidly and burn all annual weeds, insects and fungi.

I wish to emphasize three things:

First. This burning must be done *immediately* after the picking season is over. The plants are now utterly exhausted. The old leaves and roots die, a spark of life remaining only in the crown. The plant remains in this dormant condition only a few days, when new leaves start and new roots come out, above the old ones. The old foliage is an injury to the plant because it is often more or less affected with fungi and the spores are liable to go to the new leaves and should therefore be destroyed.

It must not be burned after this new growth starts, or the plants will be killed or greatly injured.



Greenville.

Second. A good, strong wind must prevail, to drive the fire over the ground rapidly, when there will be no danger of heating the crowns.

If there is an abundance of mulch, it is better not to mow the plants off. Put the mulch on the row so it will destroy all the old leaves.

Third. To cultivate the same day of the burning. The pickers tread the ground down hard, making capillary attraction perfect, so the water will draw up to the surface to be carried off by the wind and hot sun and the ground will soon dry out below the roots and the plants will die.

I have heard of plants being killed by burning, but in every case some of these things have been neglected. We have burned over our beds every season for many years and never had a bed injured. In a few weeks the bed will look like a new spring set field. As all annual weeds are killed but very little hand work is required.

It is important to cultivate so as to throw about an inch of fine earth over the plants as the new roots come out above the old ones and the crown of the plant is raised up every year. This also acts as a mulch to conserve moisture. The full matted row should be narrowed up to about a foot in width.



Warfield.

WINTER PROTECTION.

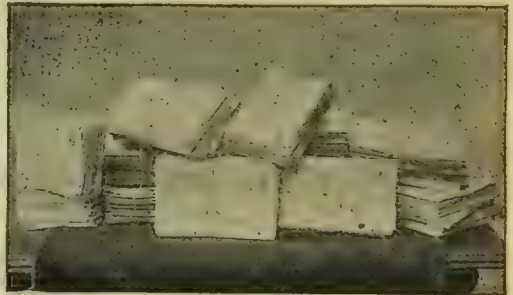
In the case of strawberries it is not the freezing that does the injury. On many soils, especially clay, when the ground freezes all night and thaws the next day under the influence of the bright sun, the ground contracts and expands, and thus heaves the plants up, pulling the roots loose, which weakens them. Now if we place some coarse litter over the plants merely to shade them from the sun to prevent thawing during the day and the frost comes out very slowly, no injury can result.

The plant must have air for its foliage even if frozen solid, hence, any heavy, dense mass like manure will smother and injure it. The strong ammonia washing down from manure is very bad for the foliage and it should never be placed direct-

ly on the plants, but it may serve a good purpose in conserving moisture between the rows. Light chaff, straw or marsh hay may be used.

In the spring if the mulch has been applied between the rows heavily enough we rake off from directly over the plants to allow the leaves and stems to come up through the mulch, and leave it until after the picking is done. If the mulch has been applied only on the plants and none between the rows, we cultivate not over one inch deep and then rake part off to the edge of the row to keep the berries clean.

If the bed is to be plowed under it should be done as soon as the last picking is over, so that all insects and fungi shall be destroyed.



Photograph of One Day's Mail.

ANSWERING QUESTIONS.

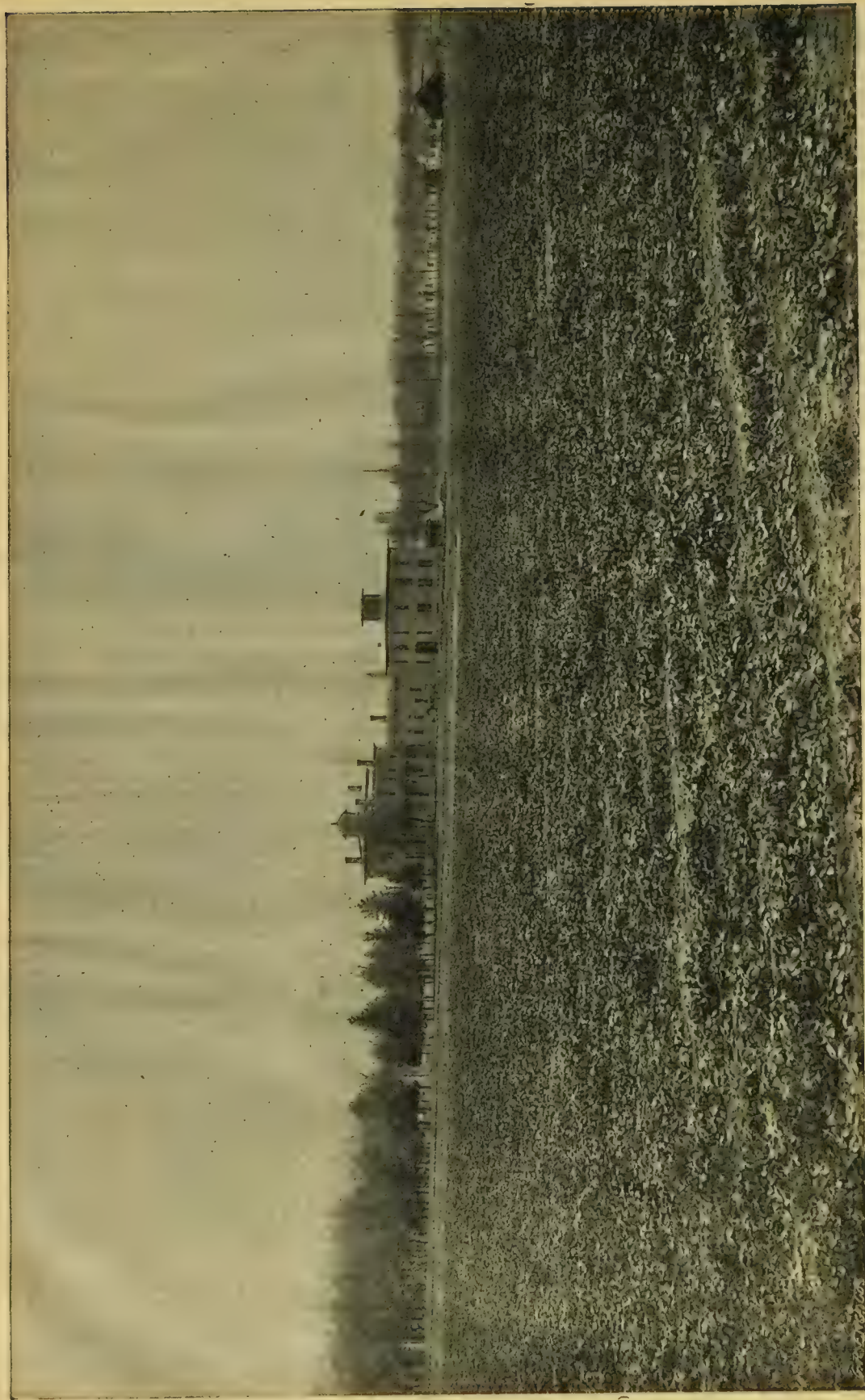
I cordially invite correspondence with all fruit growers and will take pleasure in giving them the benefit of my experience when ever it will be of service to them.

My Success depends on your success, and I am especially anxious that growers stocking their grounds with my Pedigree Plants shall do things at the right time and in the right way.

Among the opportunities I have for keeping in touch with the most progressive fruit growers of the day, I may be permitted to mention that I have a complete up-to-date horticultural library, am a subscriber and a contributor to all leading horticultural papers, have long been identified with the Michigan State Horticultural Society and am at present a member of its executive board, and President of the Western Michigan Horticultural Society, which covers the most extensive fruit section in America. I am also an honorary member of five State Horticultural Societies before which I have delivered lectures, and have been regularly employed by the Michigan State Board of Agriculture to deliver lectures, conduct institutes and lead discussions in fruit centers.

My large correspondence gives me practically an experiment station in every community in the country. They tell me of their methods of work, of the varieties they have tried and results obtained. With all these sources of reliable information I believe I can be of service not only to commercial growers but to persons growing fruit for their own table. Write me at any time, giving particulars, and I shall be able to give you some valuable pointers.

I give personal attention to all letters in the order in which they are received except in the rush of the packing season in April when they are filed and considered as work will permit. My whole time is then given to the filling of orders and arranging experimental grounds and propagating beds.



VIEW OF RESIDENCE AT THREE RIVERS LOOKING SOUTH FROM CENTER OF PROPAGATING BED. (PURCHASED WITH GREAT CROPS OF SMALL FRUITS.)

I insert the following clipping from the Three Rivers Daily Hustler of Oct. 4, 1900:

"This morning Mr. R. M. Kellogg was subpoenaed to appear before the United States Court in Washington to testify as an expert on the tillage of the soil (in the celebrated patent infringement case of weeding machines). There are few men who have given plant life and tillage so much careful study. In this line his writings and lectures have given him a national reputation. His farm here is the admiration of the community and proves his ability to instruct others."

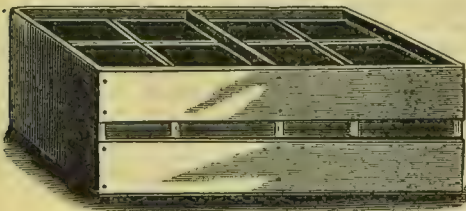
NEW VARIETIES.

Our experimental grounds for testing new varieties are carefully conducted. Parties having new seedlings of great promise may send them here and have them carefully tested and secure a full report of their behavior, and if they prove valuable we can greatly aid you in introducing them.

They may rest assured that no plants will be propagated from them except to improve them by our system of selection and restriction for our own new trial beds.

None will be allowed to leave the ground without their consent. It requires at least twenty-five plants for a fair trial. We shall test many hundred seedlings originated through our thoroughbred plants and hope soon to offer some of great excellence, but they must be thoroughly tested under many conditions before they can be offered to the public.

We received five packages of plants in one day last year without any name or postoffice mark which would enable me to identify them. One of these varieties proves exceedingly promising, but I do not know who sent it. Write your name and postoffice address on the package and also a letter at the same time giving a history of the plants.



A 16 QUART CRATE FILLED WITH BOXES.

BASKETS AND BERRY BOXES.

For many years past we have bought all our fruit packages of the Wells, Higman Co., of St. Joseph, Mich., and knowing them to be among the most extensive and reliable manufacturers in their line, I take pleasure in recommending them to any one who may be in need of any berry boxes or other shipping packages. Their goods are strictly first class, and fruit growers who are not acquainted with this firm should correspond with them. They will mail their illustrated catalogue free on application.

VARIETIES OF STRAWBERRIES.

The great diversity of soils and degrees of fertility as well as peculiar methods of cultivation adopted by different growers make it extremely difficult to recommend particular varieties.

Suppose you and a neighbor order twenty best varieties each and put them under the modes of cultivation recommended in this book. You would find one or more sorts which did better than all the others and this would be the variety you should make your leader; but when you came to compare notes with your neighbor you would not



Rough Rider.

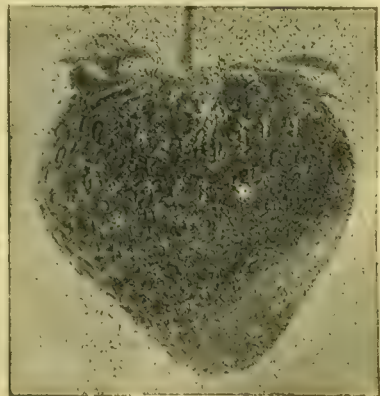
be likely to reach an agreement as to which were the best sorts. There is a great difference of opinions as to which is the best variety even on the same ground.

You need several varieties, not only for testing to determine the ones most profitable, but the tastes of your customers will vary fully as much as your plants. You must be prepared to hold their patronage by offering them just what they want throughout the season.

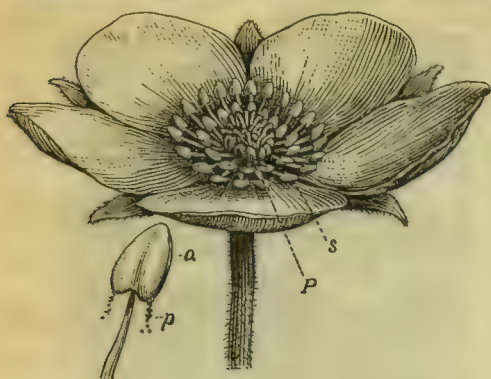
In making up this list of varieties, I have, through my extensive correspondence and published reports of government experiment stations, taken special pains to discard what are called local varieties or those which succeed only in a few localities. Many of the discarded sorts were popular over wide areas, but we have better varieties to take their places.

We have a large number of sorts now on trial and we shall breed them up, and if they develop better qualities we will substitute them for some of the kinds we now offer and thus keep only the cream of all the leading varieties on our lists.

It shall be my business to visit the great fruit centers during the coming summer and study



Gandy.



(MALE ORGAN.) BI SEXUAL (B). FIGURE 1.



(FEMALE ORGAN.) PISTILLATE OR FEMALE (P). FIGURE 2.

STRAWBERRY BLOSSOMS MAGNIFIED

To show the sexual organs, illustrating how pollenization takes place for the development of seeds and fruit. Figure 1 shows the perfect flower with Pistils (P) in center with Stamens (a) arranged around the outside. The enlarged Stamens on the left shows the anther (a) bursting and Pollen (p) dropping out which is carried to the pistillate or imperfect flowers by wind and insects. Figure 2 is a sectional view showing the pistils or female organs. The pollen falling on the stigma (a) which secretes a waxy substance for catching the pollen and carries it down the style (b) to the ovaries (c) where impregnation takes place. There is a pistil for each seed and wherever the pollen falls to touch no seed or fruit will develop, or if the pollen is weak the berries will be small and inferior. The value of Pedigree Plants, as will be seen, lies in vigor of pistils and potency of pollen and ability to develop fruit instead of excessive foliage. **SET EVERY THIRD ROW WITH A PERFECT FLOWERING VARIETY MARKED (B) WHEN PISTILLATES MARKED (P) ARE USED.**

these new varieties on other grounds and in different localities to learn their good qualities and defects and thus be able to prune off and add to our list only sorts of the greatest value and at the same time reduce the number as occasion requires.

The varieties here offered have been selected from several hundred now growing in my experimental grounds as being the very best. They have been widely tested and those introduced within the last few years have been carefully bred up and are the finest of their kind on the market. Never in my history of seventeen years of study in plant life have I had such perfect conditions in all particulars for plant breeding and testing varieties as at present.

A look at the prices will show you how, by the use of a very small amount of money, you can start a propagating bed this spring with these Pedigree Plants and propagate your own plants for setting a year hence; or, if you wish to plant largely this spring, you can't afford to throw away your money and labor on mongrel plants.

It will pay you big money to adopt the better methods and enjoy the fame of being a leader on the market and secure a competence for your family and old age.

I point out to you nothing more than I have accomplished, and whereas I have spent many years of hard work and large sums of money in experimenting with these plants, you can, for a very small sum, stock your ground with the same as I have used to produce these large crops.

Send in your orders as early as possible so as to secure the varieties you desire as all orders will be filled in the rotation in which they are received and booked. Write me whenever my experience can serve you.

The illustrations are photograph half-tones made expressly for this book and serve to show the relative types and comparative sizes of the different varieties. The descriptions are as we find them in our field notes on our testing grounds.

NUMBER OF PLANTS REQUIRED TO SET ONE ACRE*

STRAWBERRIES.	GRAPES.
18x30 inches...11,616	7x 7 feet.....888
30x30 " --- 6,968	7x 8 "777
18x34 " ---10,250	7x 9 "691
34x34 " --- 5,426	7x10 "662
15x48 " --- 8,712	8x 8 "680
20x36 " --- 8,712	8x 9 "605
18x36 " --- 9,680	8x10 "544
36x36 " --- 4,825	8x11 "495
18x42 " --- 8,297	8x12 "453
18x48 " --- 7,260	
24x48 " --- 5,445	
RASPBERRIES, BLACKBERRIES, ETC.	
3x5 feet.....2,904	3x7 feet.....2,074
3x6 "2,420	3x8 "1,815

**VARIETIES
IN ALPHABETICAL ORDER.**

See Price List on Pages 32-33.

Aroma. (B) Season very late. Size much above medium, bright red flesh to center and a good shipper. One of the very best pollenizers for all very late sorts. It is a leader here and will be generally planted. It will not disappoint you.

Bubach. (P) Season medium late. One of the large show berries of such excellent quality that it always captures the market. Berries bright crimson, moderately firm but first-class for near market, succeeds best on rather heavy soil.

Bederwood. (B) Very early and exceedingly productive. Berries above medium in size and bright red. It is recognized as a standard sort for fertilizing all early pistillate varieties. It is quite subject to rust in wet seasons, but if sprayed in the propagating bed the fungi will not be likely to develop in the fruiting field.

Brandywine. (B) Season medium to late. One of the grandest berries ever introduced. It is one of our favorites. If you do not have it by all means get it this season. It is one of the heaviest fruiterers, a splendid shipper and a "catcher" on any market. Berries very large, deep red to center, of the type shown in photograph. Stems short and

stout and holds its great load of berries well up from the ground. One of the strongest pollenizers for pistillates of its season.

Wm. Belt. (B) Season quite early to very late. Berries very large, bright crimson and one of the most productive of the extra large sorts. This year it became more popular than ever and will be generally planted.

Belle. (B) Season late. This is one of the large, long berries. It should be picked with stem on and served by dipping point in sugar and eaten out of hand. Flavor is delicious and a good shipper. Plant it for the fancy trade.

Brunette. (B) Season medium early to quite late. Berries large, cone shape, dark red to center, very productive and of the very highest quality. It will rank No. 1 as a desert berry and is in all respects very desirable, especially as a home berry where quality is appreciated.

Bismark. (B) Season medium late. A seedling of Bubach, which it resembles and is one of the most productive, large, perfect flowering berries ever introduced. Colors all over at once, very bright red and delicious. It is a good shipper.

Clyde. B Season medium. It has been many years since a berry has been introduced which created such a furore among growers as this. Its strong points may be enumerated as follows: Enormously productive, berries large, cone shaped, as pretty as a top, bright crimson to the center, and seems to succeed on all soils. By all means give this berry a trial.

Cobden Queen. (P) Season quite early to late. Berries large, cone shaped and very beautiful, bright red and, one of the best shippers, always selling at highest price. Its foliage is very rank and it makes itself at home on any soil. A grand market berry.

Cumberland. (B) Season medium early. Berries as true as a top, light crimson and very large. One of the most beautiful berries, and a great seller for near market. Mild, rich flavor. Many persons cannot eat a sour berry and will enjoy this.

Cyclone. (B) Season very early. One of the best pollenizers for early pistillates. A good shipper, of good size, high quality, bright red, long heart shape. It is one of the most popular varieties. Its foliage is very vigorous and never rusts. Succeeds on light or heavy land. Does best in hedge row.

Carrie. (P) Season medium early. A daughter of the Haverland and very closely resembles it. It is large, bright red color and very firm. It is conceded to be one of the most productive berries ever put on the market. While it was only recently introduced yet evidence is abundant that it succeeds generally and will be largely planted.

Crescent. (P) Season early. This berry has made more money for growers than any other ever introduced. When properly grown, above medium size, bright red, good quality and a good shipper. Many growers have fruited it to impotency, and laid it aside because it would not attain size. I have maintained its vigor, so that it often grows as large as Sharpless. It makes runners freely, and must be grown in hedge or half matted row for "big berries and lots of them."

Drouth King. (P) Season early. It is of the Crescent type in habit of growth and roots very deeply. Succeeds on light sand and thrives well in spite of a protracted drouth. It is "King of the Dry Lands," a fine shipper, very productive. Berries when grown in hedge or narrow row are good size and fine quality.

Enormous. (P) Season late. It is enormous in size of berry, productiveness and general vigor of plant. It is a money maker and should be included in all lists of plants. Its berries are so large, bright and beautiful that it captivates all who see it. Few varieties have made more friends during the year.

Excelsior. (B) Season extra early. This variety sustained its reputation this year and is now generally recognized as the very best extra early berry. No other extra sort on our grounds equaled it in earliness, quantity and quality of fruit. It is a good shipper and will be popular at the south for sending to northern markets. It should be kept in hedge row as it stools up readily when runners are cut.

Emperor. (B) Season medium early to very late. This and the Empress are new berries here, but they have attracted so much attention we offer them for trial. The plant itself is very large and one of the most productive with very large berries, bright red, often flattened but beautiful and requires only a few to fill a box.

Empress. (B) Season the same as Emperor and has many of its characteristics except the berries are darker in color. It is a luxuriant grower, and produces large well shaped berries of high quality. Both originated in Canada where they are leaders for extra large berries. We urge growers to test them.

The Earliest. (B) Ripens with Michels Early and is a good berry if grown in the hedge row and especially valuable on light land. Berries are medium size and good shipper.

Greenville. (P) Season quite late. Now in general cultivation and a great favorite. Its a rival of Bubach, but succeeds better than that on sandy soil. Berries very large, bright crimson and very productive, a splendid berry for near market.

Gandy. (B) One of the most popular extra late sorts. The berries are large, cone shaped and as even as a top, and perhaps as largely planted as any late variety. It is very productive considering it ripens its berries nearly all at once and after most other varieties are running small, so the grower is still able to supply his customers with fine large berries.

Gladstone. (B) Here is a new berry from which we have made but one selection as it was introduced only two years ago. It is pronounced by all testers as a great acquisition and we shall plant largely of it. The berry is large bright in color and beautiful; it is so vigorous in growth that it is surely destined to become a general favorite.

Glenn Mary. (B) Season medium early to quite late. Berries bright red to center, large and fine. It is a great favorite with all who have fruited it and is being largely called for this spring. For a fancy berry in a fancy market it surely fills the bill.

Johnsons Early. (B) Season very early. It is the great market berry along the Atlantic coast for New York and other northern markets. Many dealers in New York City advertise it as a specialty and it sells at an extra price. If you are shipping berries you will not make a mistake by setting it largely. It does best in hedge row. No where has it been affected with rust.

Haverland. (P) Season medium early. This berry, when well propagated, holds its place as the most productive berry grown. When planted in hills or hedge the berries lay in windrows on each side of the row. While it is not classed as a firm berry, yet it has a tough skin and handles well for a near market. Its stems are not strong enough to hold the immense loads of berries up from the ground and must be mulched to protect them. Berries large and uniform, bright crimson.

Kansas. (P) Season late. This was introduced last year at five dollars per dozen. It originated in Kansas and was sent here for trial four years ago and was at once classed as one of the most promising on our trial grounds. Grown in hills or hedge row the berries lay in piles around the plant and are very large, bright red and luscious. The plant is so vigorous that it brings every berry to perfection. Several hills yielded over four quarts each. I am very enthusiastic over it and commend it to growers as a variety of the greatest merit. Get a few of these for your propagating bed from which to grow plants for next season.

Lovett. (B) Medium early to quite late. Good size and very dark color. It stands high as a pollenizer for pistillates of its season and is very popular over a wide area of the country.

Lewis Gauthier. (B) Season quite early to late. It was imported from France four years ago. Its value lies in the fact that it produces a fairly good crop at the regular season and the new runners perfect their buds early and bloom in August and fruit during September and October. To secure this result as soon as the berries are through fruiting the runners should all be cut away narrowing the row up so it will have a chance to throw out new runners again in the spring and early summer. When the runners have set one or two plants the balance should be cut off so as to secure early development of buds. Plants must not be allowed to mat thickly. Keep them at least eight inches apart.

Maximus. (B) A berry of the greatest promise. In habit of growth it makes few runners and stools up to mammoth proportions. The berries are conical in form, of the largest size, deep glossy scarlet, rank high as a table berry and should be included in the order for a propagating bed, as the plants will be in great demand as soon as its merits are known.

Marshall. (B) Season late. King of big berries. I have greatly improved vigor of foliage and increased size of fruit by my method of propagation and now believe it has no equal as an extremely large berry. Berries deep blood red to center, flavor very much like the wild berry. Foliage large and vigorous. While it will not perhaps yield as many quarts to the acre as some medium sized berries yet it is the best extra large berry. It makes comparatively few runners and should be grown in hedge row or hills to get largest berries.

Michels Early. (B) It has long been known as the extra early berry. When first introduced it created a great furore in the south as the extra early berry for shipping north and is now generally cultivated throughout the country. In many places through bad breeding it has become quite unproductive, but where its vigor has been maintained and grown in hedge or very narrow rows it is one of the most profitable berries grown as the early berry catches the big prices.

Mexican Everbearing. (B) It may be doubted if any of the so called everbearing sorts are profitable for market except near large cities where very fancy prices can be had, usually a dollar per quart. It is, however, a great treat to have berries in August and September. The season governs largely the second crop. We urge the setting of a



Photograph of the berry field of JOHN BAKER, the "First Fiddler" of the berry business in Kane county, Illinois, who has built up a great reputation for growing fancy berries. Mr. Baker spent two days looking over our experimental grounds and propagating beds and emphatically declared that his success was due to studying "Great Crops of Small Fruits and How to Grow Them," and the use of thoroughbred plants with which he has renewed his grounds for many years. Notice that these great plants are grown in hedge row. The big berries and lots of them are hidden in the foliage.

few for this purpose. This variety, like the Oregon, bears a regular crop and then develops its buds and fruits a second time throughout the fall months.

Manwell. (B) Season medium. Berries large, good shape, bright red, very productive and good. Its brilliant color, high quality and even size make it very desirable for those catering to a faucy family trade.

Michigan. (B) One of the latest berries on the list. There has been some complaint about foliage rusting in wet seasons but if plants are sprayed in the propagating beds there will be little or no danger of this and it will be found very profitable where an extremely late berry is desired. The berries rank among the largest and will serve the market when other berries are gone.

Monitor. (B) Season medium to late. This was introduced last year from Missouri. Prof. Whitten of the Columbian experiment station, says of it, "It made a good growth, is healthy, endures the drouth well, the bloom is large and rich in pollen; in fact it is one of the most vigorous and productive plants and largest fruit we have tried. It is equal to the best."

Magoon. (B) Season very late. It has more than met expectations. One of the most valuable for northern growers who desire to ship south, after southern berries are gone. Very large, bright red to center, rich flavor. They ship it from Oregon and Washington to Chicago in carload lots receiving a high price for it, after other sorts are out.

New York. (B) Season medium late. It proves a very valuable acquisition and is well worthy the consideration of all who are catering to a faucy trade. The berries are large, bright and showy in the box. Its foliage is equal to the requirements in bringing the last berry to perfection. It is widely disseminated although the introductory price was five dollars per dozen. It can now be had at a reasonable price so the demand for plants will be large.

Nick Ohmer. (B) Season quite early to very late. It has now been selected and built up so it meets every requirement for a fancy large berry and is deservedly popular. One of the best pollenizers because it has a long season. Its berries are large and beautiful and will supply the market where a fancy trade is being carried on. The demand for this variety has rapidly increased every year since it was put on the market and this year we have propagated a stock large enough to meet it.

Ocean City. (B) Season medium early to very late. It made a host of friends this year by producing big bright red berries and lots of them. It is now generally planted and will be largely set the coming spring. It meets the requirements of those who want large berries.

Pennell. (B) Season medium. This was introduced last year and is an exceedingly promising variety. Its foliage is rank and berries large and of superior quality. It is well worthy of trial.

Parker Earle—Improved. (B) Season late. During the past season few berries have received the commendation of this one. It roots deep and brings its berries all to perfection. It makes runners very sparingly and therefore is especially valuable for growing in hedge row and on land especially rich as its strength goes to making crowns and fruit buds. Its berries are big enough and of a uniform size and make a fine impression on the market. It is a money maker sure enough.

Parker Earle. (B) Season late. It requires heavy moist soil. It does not do well on light sand. It is especially valuable and the leading sort for muck land, as it makes few runners and stools up well and protects its blossoms with its foliage, and has so many buds that it requires several severe frosts to destroy the crop. It is very productive on rich soil.

Rough Rider. (B) The evidence is that this is the most valuable extra late berry under cultivation. It was introduced last year but had been grown on a large scale in Oswego county, New York, for New York City and other eastern markets. The fact that it comes in after all the other sorts are gone makes it very desirable. In its general appearance in fruit and foliage it closely resembles the Bubach, but is a little darker in color. There is no question but that it will be a great success and head the list as an extremely late berry. While plants are a little high, yet a few for propagation will be a big paying investment. You must have them.

Ridgeway. (B) Season medium early. Originated in Indiana where it is largely planted. Here it ranks high and I take pleasure in commending it as a vigorous plant with fruit of excellent quality and good size. It roots very deeply and will stand severe droughts and yet bring its berries to perfection.

Ruby. (B) Season medium. It is certainly a ruby of the first class. Plants are large and stocky. Berries large, cone shape, even in size, a good shipper and one that catches the eye on the market. It is really an "up-to-date" berry.

Star. (B) Season medium early. It is of recent introduction but it is one of the bright stars of the strawberry firmament. The berries are large and true as a top; bright red and of excellent quality, and one of the most desirable of the new varieties.

Sample. (P) One of the Kings among very late varieties. Its fruit is large and bright, beautiful in form and of the highest quality and its foliage so vigorous that it must stand as one of the most popular sorts. Few varieties have made such a record in so short a time. It was one of our pets from the start and knowing the demand would largely increase in every neighborhood where it was introduced we have propagated largely of it and can meet all demands.

Seaford. (P) Season quite late. Here is another berry over which we get very enthusiastic. "Windrows of great big beautiful berries on each side of the row," is what a visitor said and that was perhaps the best thing which could be said of its productiveness. The berries are great big bright fellows which catch the eye of the "critical buyer" on the market. Everybody speaks in the highest terms of it and you will make no mistake in planting it largely.

Senator Dunlap. (B) Season early to late. This berry was sent here for testing in advance of its introduction which occurred last year. The records place it on an equality with anything on our trial grounds. Its fruit is a beautiful glossy red, fine shape and large. Grown in hills or hedge row it stools up readily and in the matted row it makes a fair number of runners which are easily managed. The demand for plants next year will be large as it is sure to be very popular. As a market berry it will be a competitor of Warfield. We urge growers to try it.

Tennessee Prolific. (B) A very early large beautiful productive berry. I am sorry the letter "T" in the alphabet brings this berry so far down in the list for it has made such a grand showing every year that it should be at the head of the list for early berries. It is planted largely in the south for shipping north and succeeds here equally well. Its foliage is vigorous, it roots deep and stands the drouth well. It makes runners freely but when grown in hedge row stools up in fine shape and should be classed as "enormously productive."

Up-To-Date. (B) Season medium to late. The foliage is vigorous and berries very large, dark red to the center, mild flavor and very desirable for eating out of hand. It roots deep and withstands drouth better than most sorts of its class.

Warfield. (P) This is the great early market berry all over the country and more generally planted than any other. When in full vigor its productiveness is a marvel. While the plants in the propagating bed are never as large as some other sorts, yet when grown in hedge or very narrow matted row they stool up to good size and berries are very large, dark blood red and a good shipper. One of the very best for canning. By all means renew your stock with these thoroughbred plants.

Wolverton. (B) Season medium to very late. If this berry had been introduced and distributed properly it would be in general cultivation. The foliage is so vigorous and healthy; the berries large bright red and quality so far above the average that every one who tests it plants more largely of it each year.

RASPBERRIES.

The raspberry fields of the country are generally in a deplorable condition. Not one grower in a hundred is harvesting one half the berries he should and what he gets are very small and without flavor.

It has been the universal practice for growers to fruit plantations until run out and then propagate from them to start a "new" bed which was again fruited four or five years when it did not pay for labor and then renewed again in the same way.

Nurserymen have contributed to this disaster by contracting with these parties who grow on a large scale for evaporating, for plants to fill their orders and thus their exhausted stock has been sent broadcast over the country.

Pruning has often been neglected and these plantations soon become pollen exhausted and while the canes are large they produce very little fine fruit. The weakened canes easily succumb to fungi and other diseases and after four or five light crops are run out instead of fruiting heavily eight or ten years as they should do.

The true way is to breed up by propagating from ideal canes carefully selected and pruned. This is done with us every year so that this rapid selection weeds out all weak canes and leaves only those which are perfect and in full vigor.

The photograph on the back shows one of our fields the second year after planting. The camera was placed too low to show the rows on right or left which are set seven feet apart, but exhibits the wonderful vigor of plants propagated under our system. This is the field which has produced the plants for this year's sales.

It is the big crop every year that pays and to get this you must have vigorous plants.

Growers should propagate their own plants as far as possible but bear in mind it is a great error to think you can grow fruitful plants from old run out scrub stock.

You can order a few of these magnificent Pedigree plants this spring and bury the tips and thus get a start of thoroughbred plants for a large plantation next year. If your ground is ready you cannot afford to wait for propagating as the *extra berries* on one crop would more than pay for plants and you would be one year ahead.

Set in rows seven feet apart and three feet apart in the row. Having fitted the ground as for strawberries plow a furrow about four inches deep and set plants flat in bottom of the furrow with roots spread in all directions taking great care not to break off the buds and firm the soil as solid as possible with the feet all around the plant and fill in the furrow with loose earth to act as a mulch. Cultivation should be frequent until the last berry is picked when the old canes should be cut out and burned at once to destroy any fungi or insects which may have found a lodgment in them.

It is the greatest blunder to stop cultivation and allow berries to dry up and canes to stop growing in mid-summer, and then make a late growth in the fall which will be sure to winter kill.

One of the neatest ways of growing raspberries and blackberries is to string a wire about four feet high with a stake every forty feet, and tie the canes to this. The expense is not great, and it prevents the wind from threshing the berries off and gives clear space for cultivating. In this case I would not pinch them back, but let them grow in their natural way, and at winter pruning cut off the upper third, and this will leave enough buds to produce all the berries the bush can mature



View of the raspberry field of M. W. HOLDEN, the "First Fiddler" in berry growing in Iowa county, Iowa. Mr. Holden writes: I can return but little to you who are doing so much for berry growers, but I do want to send you a photograph of my field from your plants. Notice the single wire trellis to which the bushes are tied, permitting thorough tillage and which always produces large, clean, luscious berries to take to market.

without exhaustion. I have come to regard pinching off terminal buds, when the plant is about eighteen inches high, a mistake. Checking natural growth at this time interferes with assimilation of plant food, and if the season is very dry and hot several dries often intervene before new buds start.

But if ground is rich canes get so long that cultivation is interfered with and pinching back might become a necessity if wire is not used. Great care should be exercised to remove only the terminal buds and not a leaf if it can be prevented. Never pinch in the laterals. One pinching of the main plant is enough. *Never* tie the canes to a stake in a bundle. They must have light and air and will not fruit without it.

VARIETIES OF RASPBERRIES.

Cumberland. It is now a settled fact that this is the chief of the black caps and will make the grower more money and reputation than any other variety ever introduced. Its points of excellence is great vigor and size of bushes, productiveness, large berries and high quality. Its extreme hardiness has been fully shown and it will succeed anywhere a black cap can be grown. You can propagate from fifteen to twenty-five plants from spring set plants by burying the tips in August. By all means start with this grand berry now.

Black Diamond. This is considered a jewel wherever grown. The berries are so large and shiny black, look so beautiful in the box and the canes are so hardy that for a long season berry it must be very popular for the garden or market.

Conrath. Extremely hardy and enormously productive and one of the most valuable berries for evaporating as well as for the general market. It is very popular wherever known. It has a long season, early to late.

Eureka. A large shiny berry commencing to ripen very early and continues late. It is widely planted and deservedly popular.

Palmer. The earliest black cap grown. It ripens its fruit several days before strawberries are gone and enables you to supply a break. It is very vigorous and productive.

Kansas. More popular than ever. It commences to ripen very early and gets its fruit on the market while berries are high. They are large and beautiful. For hardiness of the canes it is among the very best.

Older. It succeeds where drouths are severe as it sends its roots down deep. Very popular in the far west, season, medium early to late.

Munger. Same season and closely resembles the Gregg. It lays claims to being more hardy and a little later.

Gregg. The most popular extra late berry grown. Is found everywhere from ocean to ocean. When cultivated as directed and given the oat crop for a winter mulch is hardy and all right. Berries here often an inch in diameter and superb.

PURPLE VARIETIES. Purple varieties lead all others for canning. They are supposed to be hybrids, a cross between the red and black and combine the good qualities of both. With many they are preferred to any other for a table berry.

Haymaker. Originated in Ohio where it has created quite a sensation. In vigor of cane it exceeds anything I have ever seen. Its berries are so large and luscious and canes hardy as proved in 1893 that I believe it will supercede all the other purple varieties. It propagates from tips readily and a few plants now will give you a good start for a year hence.

Cardinal. This was introduced two years ago from Kansas at \$2.50 per plant. The canes are a beautiful cardinal color, fruit good size and in productiveness, well you ought to see it. Just prune close and cultivate well and a very few plants will furnish enough for any family.

Columbian. Now very widely distributed and a leader. The berries are often an inch in diameter and as productive as need be. Prune close, and cultivate well and you will get a large crop. Remember all purple berries propagate from tips and you can get many plants the first year.

RED VARIETIES. The cultivation, same as the blackcaps except that they should never be pinched back. Let them grow all summer in their own way and at winter

pruning, as a rule, cut off half the buds. The buds are distributed along the lower cane so if treated in this way they will hold their fruit up much better and not be liable to overbear and run out. Treat all suckers as weeds and cut them off as soon as they appear.

The Early King. I have never seen an extra early red raspberry which has pleased me so much as this. The canes grow large, the berries grow big, they are so firm and ship so well and so bright in color that everybody who has it will plant more and those who do not have it should get it at once. It is the earliest of the Earlies. Its season lasts till the Cuthbert is ripe.

Miller. Until the introduction of the Early King this stood at the head of the extra early berries and people who have it are so well pleased they will be slow to change. Berries are good size, bright color and firm enough to ship long distances.

Turner. This has long been known as one of the most hardy, productive and reliable sorts of red raspberries. It was never known to winter kill in Michigan when properly cultivated.

Colorado Iron Clad. A variety of great value especially in point of hardiness. It was found growing wild in many parts of Colorado, always withstanding the severest winters. Parties in the northwest who have been deprived of this delicious fruit should try this berry. The berries, while not a good shipper, are most deliciously sweet and for family use or near market are very fine.

The Cuthbert. Long recognized as the queen of the market still holds its place. When pruned properly and given the oat cover crop we hear nothing of its being tender. It is cultivated from ocean to ocean and the variety that takes its place will have to combine more good qualities than any yet found. Season is with the Gregg.



The beautiful residence and grounds of FRANK E. BEATTY, the "First Fiddler" in the berry business of Fountain county, Indiana, who has built up a large and profitable business in fancy berry growing. He writes: "I am in receipt of your letter of the 6th and wish to thank you very kindly for your information and advice. I have purchased plants of you for a number of years and have always found them just as represented. After visiting your farm I am thoroughly convinced that your method of plant growing is done exactly as you represent in your catalogue. I have adopted your method of cultivating and careful plant selection and by so doing have achieved grand results. There is no question but the key note of the berry grower's success lies in healthy thoroughbred plants. Wishing you the success your plants merit and you truly deserve, I am, Yours very truly, FRANK E. BEATTY."

THE NEW BLACKBERRY CULTURE.

Nothing sells better, nothing pays better, nothing is grown more easily. The new method of starting the plantation produces double that of the old way. Its fruit is more luscious and a plantation will fruit heavily under good culture and pruning from fifteen to twenty years, giving annually large crops.

The demand for this fruit is practically unlimited. The trouble is blackberries as offered are sour, seedy, and lack flavor. Scarcely a town in the country is supplied at all with large luscious blackberries.

Under the new system of establishing the patch every cane is loaded with large luscious berries of the most delicious flavor and gives a big crop every year because the ground is filled with a dense mass of roots making root pasturage of every square inch of soil for several feet around the plant, furnishing an abundance of food to sustain it in bringing its great load of fruit to full maturity without exhausting the plant.

How it is done.—Pursue the same method explained in breeding up strawberries. Find all the ideal canes bearing the finest fruit and not over two years old. Early in the fall dig them up and cut roots in pieces about three inches long and pack in boxes of clean, coarse, sharp sand and place in a cold cellar regulated with ice so the thermometer will stand at 35 degrees. An ordinary cellar will not do, for if allowed to get too warm the cuttings will commence to grow and all be spoiled. If allowed to freeze they will not callus and thus fail to emit sufficient roots.

What is a callus?—It is a law of nature that when a root is cut or injured the plant will repair the damage by sending out new roots, but no new roots will start until a callus is formed. Certain wood cells and a gristle-like substance must form, and out of this callus the roots start. The process requires time and goes on at a low temperature and the longer the root is kept in this dormant condition the more calluses there will be.

Roots prepared in October form calluses in great numbers before planting time the following May,

when the cuttings are placed in nursery rows in rich, moist, sandy soil about three inches apart and one and a half deep. It is quite difficult to make them grow properly without irrigation. *If the roots get dry* they will fail. If buried too deep they damp off and die. Low, springy or cold ground will not do. They must have frequent cultivation and not a weed allowed to grow among them. As soon as dormant in the fall, the plants are carefully taken up and roots trimmed to the proper length and again packed in coarse, sharp sand so it is solid around every root and kept as in the first winter, when calluses form all along the sides and ends of roots so that when planted out where they are to fruit in the spring myriads of roots will start at one time and at the end of the season the ground will be full of fine feeding roots as above described. In keeping them in the callusing cellar it should be supplied with ice, for if perchance the cellar gets too warm the plants will grow and be lost. We are able to send them to customers while dormant in the spring.

The common way is, as in the case of raspberries, to let a patch fruit as long as it will and then mow off the tops and let suckers come up from between the rows and the next season to dig them up to start a new patch. Of course the weakness and exhaustion of the old patch is carried into the new. The roots on the plant are few and commence growing always from the end, and I have seen them extend several rods away, while near the canes the ground would not be occupied at all. The sap having to come through these long roots to the leaves for assimilation they are continuously sending up suckers which become a nuisance.

Digging sucker plants destroys a plantation very quickly and causes the sucker nuisance to increase, and cutting the roots thus depriving the plant of its feeders when soon to be loaded with fruit, exhausts and renders it unfruitful. Treat all suckers as weeds and cut them off a little under the surface as soon as they come up.

The location should not be on low or marshy ground. High ground is better.

VARIETIES OF BLACKBERRIES.

Price List on Page 34.

Our stock of blackberry plants is large and they are the finest plants I have ever seen. They are strictly thoroughbreds and propagators will find them first class for their purposes. The cost of growing them, renewing them rapidly as we do from the ideal canes as already explained, is so much we can only furnish them at dozen and hundred rates. You can have as many hundred as you want at prices stated.

They are large, root cutting plants, thoroughly re-caloused and under treatment commended, and on good soil will last many years longer than common plants and produce double the fruit of a very superior quality. This preparation of roots by calusing them is a great horticultural triumph. In varieties we place the

MESSEREAU

at the head of the list. It is beyond all question the king of blackberries for commercial purposes. Its hardiness is fully proven and it will succeed anywhere a blackberry grows. The canes grow to a very large size and it is very prolific; berries of large size and high quality. They do not turn red in the box and will hang on the bushes till they are fully ripe. They are shiny black and so beautiful they will command the highest price.

The Western Triumph. On my farm at Ionia it has been the leading berry for twenty years, and has never failed to yield a large and profitable crop. I have never given it winter protection, and have never known of a failure if properly cultivated. It is of good size, free from core and has a delicious flavor. Season early.

Taylor Prolific. Follows the Western Triumph in season. It is regarded as very hardy. In quality it is probably the richest berry grown, having that sweet aromatic flavor peculiar to wild berries. It prolongs the season to the early grapes.

Snyder. That old iron clad, which succeeds anywhere a blackberry can be grown. If properly pruned and cultivated, the berries are good size and fine. Like all other blackberries under neglect and not pruned, it overbears and berries are small.

Ancient Briton. The leading berry in the northwest, where it grows to great perfection. Its canes and flexible roots render it easy to lay down for winter protection. Its berries are fine; season medium early.

Eldorado. Has now been thoroughly tested and is meeting with much favor. The demand for plants will exceed the supply. Canes are strong and entirely hardy; berries good size, sweet and rich.

Early Harvest. The earliest blackberry grown, ripening with first raspberries. The berries are not large but so very even in size and beautiful they sell fast. It comes in long in advance of other varieties. It is not classed as hardy but its long slender growth makes it easily laid down for winter protection.

Erie. A large sweet berry, hardy and vigorous and one of the leading and popular varieties. It is generally cultivated and a success in all particulars. Berries are large, roundish, glossy black and of excellent quality.

Kittatiny. An extra large vigorous and productive variety. The canes are extra large and berries long, black and sweet.

Ohmer. The latest berry on the list, and one of the best. Berries are extra large for its season and should be planted largely. Extreme late berries always sell at a high price.

Agawam. Ranks highest in quality. Prof. Bailey pronounces it as the best and it is probably the most popular berry in New York where it originated. It has been proven to be entirely hardy and especially valuable for family use where quality is the first consideration.

DEWBERRIES.

I wish all our horticultural friends could have seen our field of dewberries the past season. The vines were literally black with the great luscious beauties. There were many bushels in which every quart contained specimens two inches long. People on the market went wild over them.

They are especially valuable for canning as they keep their shape and color and look so tempting

on the table that they are coming to be generally preferred to the high bush berry.

They begin ripening soon after strawberries and are gone before blackberries come on the market.

If they are started right and kept properly pruned they will fruit heavily for many years without renewal but you cannot keep up their fruiting vigor by taking from old plants.

We have given them special attention, renewing often to get the best variations and throw out weaklings and bad variations. These plants are thoroughbreds and the best rooted I have ever seen.

Prepare the ground as for strawberries. Make rows five feet apart, plow a furrow about three inches deep and set plants three feet apart and firm the soil well around the roots, taking great care not to break off the white buds you will notice in center of plant. They renew themselves every year the same as raspberries.

In fertilizing use plenty of bone meal and wood ashes and barn yard manure sparingly. Do not pinch in the terminal bud. We do not want any laterals. The best buds are on the main cane near the ground. It will do no harm if the vines run a rod in length.

Early in the fall select not more than five of the strongest canes and cut them off about thirty inches from the root; cut all others off close to the ground. Then lay the remaining canes on the ground and throw the cuttings and any rubbish or straw you may have on them so as to hold the canes close to the ground. This is all the winter protection they need. In the spring raise the canes and put the rubbish under them to keep the berries clean. Lay the canes straight with the row to permit cultivating which should be frequent up to the first of August, when oats are sown the same as in the blackberries.

Many put up a two wire trellis, the first wire about eighteen inches from the ground and the second about a foot higher and tie the canes to these the same as for grapes. This makes it easy to cultivate and gather the fruit. Pickers are glad to get a cent a quart and they make big wages at it. If wires are used prune in the fall and lay canes on the ground and tie them up in the spring. Don't gather the fruit more often than twice per week. The berries are not sweet and at their best till they have been fully black three days.

Lucretia is the standard variety. That is the one we have been talking about. They often exceed two inches in length and an inch in diameter. If yours do not grow that large it is because you have not managed them right or the plants have been neglected and have "run out" which is only another name for barrenness.

Austin's Improved is a good berry and closely resembles the Lucretia. It is very popular in Texas, where it originated.

HARDINESS OF RASPBERRIES AND BLACKBERRIES.

The hardiness of all berry bushes can be greatly increased by proper cultivation. The term "winter killing" is a misnomer. It should be called *summer killing* for while the killing is actually done in the winter it is made possible by the lack of proper cultivation during the summer.

The ground is allowed to dry out in mid-summer and the plants stop growing and proceed to ripen their wood and buds and prepare for winter. Later in the fall rains come and a late growth sets in which does not ripen before the leaves are killed by frost and then the whole process of growth of wood and buds is stopped and the plants reach heavy freezing weather full of sap and are injured or destroyed the first cold snap.

How this can be prevented.—Start the cultivator early in the spring while the subsoil is full of water to prevent evaporation. Cultivate every week and always after every rain. When berry picking commences the ground is tramped down hard making capillary action perfect so water draws up through the firm surface soil very fast, causing berries to dry up as well as stopping the growth of the plant. This is the reason why it is important to cultivate the same day after every picking.

Cut out the old wood as soon as the picking is over and then about the first of August sow as much as four bushels of oats to the acre and cultivate in. The amount of oats recommended is not excessive because they make so rapid growth they will not stool up and we want a heavy mat to make a mulch which will shade the ground and send its roots down appropriating the plant food and moisture so the bushes do not get it and this checks growth and causes them to ripen the wood slowly and when winter comes all the canes will be firm and solid and will pass the winter like a scrub oak.

The oats will make a large growth and remain green until hard freezing comes when they will kill down but continue to shade the ground and prevent soil washing by winter rains, and in the spring be sufficiently rotted to cultivate in and add largely to the humus of the surface soil which prevents the particles from settling together and forming a crust, thus aiding very greatly in getting the desired early spring growth. The more humus there is in the soil the easier it is to conserve moisture.

Nothing pays so well in raspberry and blackberry growing as this process of cultivation. It keeps the berries large, juicy and delicious until the last one is picked. All the berries will then grow to their full size and a bountiful harvest is secured every year. All the growth you get before the first of August is a benefit; all you get after that is lost, and all the wood made after the first of September is killed by slight freezing. Always let the cultivator go to a uniform depth of three inches so the roots can come near the surface to get air and still not be broken and mutilated by the cultivator.

CURRENTS.

Price List on Page 34.

Currents are so easily grown, fruit so heavily, are so hardy and easily cared for that it is amazing that every table in the land is not abundantly supplied with this cooling and delicious fruit. The ground should be made very rich and the weeds kept out by frequent shallow cultivation. Heavy mulching will answer in small gardens but for the field give thorough tillage.

Prepare the ground as for raspberries and blackberries and set plants in rows six feet apart and four feet apart in the row, making check rows so you can cultivate both ways. Keep well pruned by cutting out old wood and shortening in new wood. Do not allow them to overbear and you will secure immense crops every year.

The Currant Worm appears soon after the leaves start, near the ground in a cluster. If a weak solution of Paris green is sprinkled on the lower center foliage that will be the last of them. If they appear later, dust a little white hellebore while the dew is on, or put a teaspoonful in a pail of water and sprinkle with a whisk broom.

The London market is by all odds the most profitable currant to grow. It sells for half more and produces almost double the fruit of any other variety. More will be set in Michigan this year

than any other sort. The fruit is large, fire red, and clusters fine.

Victoria has long been a favorite. Where the currant borer is known to be numerous this variety should be planted, the pith being so small that the worm cannot work in it to do serious injury. Fruit is good size, bright red and very productive.

Fay. On very rich, heavy land and high culture it is fairly productive, and has very large berries. It does not sell better nor produce half as much as the London Market.

Cherry. The old standard currant, good size, good bunch and very productive.

Pamona. A nice large, early red current which is making many friends by reason of vigor of bush and superior quality of fruit, and is sweeter than other varieties.

THE GOOSEBERRY

Is now attracting much attention and proving one of the most popular berries grown. The demand is increasing very much faster than the supply. Their general cultivation is similar to that of currents, and insects are disposed of in the same way.

For picking use a thick pair of buckskin gloves and strip the fruit off by handfuls, run through a fanning mill, or pour them on a blanket so that the wind will blow the leaves out. Its quick work. Keep the bush pruned rather closely, and top of bush open. They do better with heavy mulch.

Smith's Improved is a large pale yellow berry of great beauty and surprisingly productive. It is making many friends.

The Downing is the most popular berry for market, large, even, fine grained, and makes a fine large bush.

Houghton is enormously productive and very free from mildew. Berries are not quite so large as Downing, but in some markets sell better.

Red Jacket. A comparatively new but now well tested variety of much merit. Resists mildew, large berries, very hardy and good.



PRUNING.

The object of pruning is to make plants more productive and to extend their time of usefulness. If left unrestricted they throw their whole energies into this one act of multiplying their species by seed bearing. While they should be encouraged to bear a large crop of fruit they must not be allowed to bear an excessive crop and so exhaust themselves that they cannot produce another large crop for several years, hence we must determine their ability and relieve them of surplus fruit buds, maintaining an equal balance between root and branch, preserve symmetry and beauty and furnish light and free air to all parts of the branches. With these suggestions the engraving will show how the work should be done.

THE VINEYARD.

Of all the fruit that grows there is none more beautiful and tempting than the grape, with its great rich clusters hidden away in the cool shade of its dense foliage. They are so easy to grow and afford so much pleasure for the labor expended, that a business man, mechanic or farmer who should deny his family or hired help an abundance of this luscious fruit comes close to the border of cruelty. A few vines, a very little care, and the enjoyment is yours.

VARIETIES OF GRAPES.

There are too many varieties that are not especially valuable. We describe a few of those we regard as the cream of the list.

BLACK GRAPES.

See price List on page 34.

Concord. It may be said that the introduction of the Concord was the beginning of successful grape culture in this country. It succeeds wherever a grape can be grown. It is yet the leading market variety and too well known to need description, but in many localities is giving way to the Worden.

Worden, I believe is the richest and sweetest black grape grown in this country. Perfectly hardy, fully as productive as Concord, larger berry and cluster, and a week or ten days earlier. They are gone before Concord arrives.

Moore's Early is one of the best extra early grapes, ripening fully two weeks ahead of Concord. The berry is very large, entirely hardy, and on rich soil very productive. It is generally all gone before Worden comes on. Must have very heavy, strong, rich soil.

Campbell's Early. This is the latest furore in grapes and is now attracting more attention than any other grape. Berries very large, often an inch in diameter, very sweet and rich and one of the earliest good grapes. It has received many medals of award including those from American Pomological Society and American Institute, New York, and various State Horticultural Societies.

Wilder (Rogers' No. 4.) Bunch and berry large, early, hardy, healthy and productive; good keeper, profitable and of excellent quality.

Barry (Rogers' No. 43.) A very attractive grape. Bunch medium size, berry large, sweet and good, vine a strong grower, healthy and hardy. Season with Concord.

RED GRAPES.

Delaware. Considered by many as the standard of excellence in grapes, requires strong soil and good culture.

Agawam. One of the longest keepers and best family grapes grown. Can be kept until March.

Jefferson. One of the best red grapes, a good grower, healthy, hardy and productive, ripens with Concord.

Salem (Rogers' No. 22.) Bunch and berry very large. Healthy, hardy and vigorous. A good keeper and fine table berry.

Brighton. Dark red; one of the most desirable of the new grapes; clusters very uniform and beautiful; quality fine.

Wyoming Red. One of the most hardy and beautiful very early red grapes grown. Skin rather tough, keeps well, fine flavor, vine very vigorous and hardy.

WHITE GRAPES.

Moore's Diamond. Bunch and berry very large; strong grower, hardy wherever grown, and becoming more popular every year. It has come to stay and will be largely planted and sought for in the market.

Niagara. Quality about like Concord; bunch and berry very large; vigorous, healthy and hardy.

Duchess. Pale greenish yellow and of the finest quality. Season a little later than Concord.

PRICE LIST OF PLANTS.

Strawberries

These prices are for plants of one variety only. Not less than 12 of any variety of Strawberries will be sold, as less than that number is not sufficient for a fair test. No order accepted for less than \$1.00.

VARIETIES	For 12	For 25	For 50	For 100	For 200	For 300	For 400	For 500	For 1000
Aroma (B).....	\$0 15	\$0 20	\$0 25	\$0 50	\$0 75	\$1 00	\$1 25	\$1 50	\$3 00
Bederwood (B).....	15	20	25	50	75	1 00	1 25	1 50	3 00
Wm. Belt (B).....	15	20	25	50	75	1 00	1 25	1 50	3 00
Bubach (P).....	20	25	30	60	95	1 25	1 50	1 75	3 50
Brunette (B).....	15	20	25	50	75	1 00	1 25	1 50	3 00
Bismark (B).....	15	20	25	50	75	1 00	1 25	1 50	3 00
Brandywine (B)....	15	20	25	50	75	1 00	1 25	1 50	3 00
Belle (B).....	15	20	25	50	75	1 00	1 25	1 50	3 00
Carrie (P).....	20	25	30	60	95	1 25	1 50	1 75	3 50
Clyde (B).....	15	20	25	50	75	1 00	1 25	1 50	3 00
Crescent (P).....	15	20	25	50	75	1 00	1 25	1 50	3 00
Cumberland (B)....	15	20	25	50	75	1 00	1 25	1 50	3 00
Cobden Queen (P)...	15	20	25	50	75	1 00	1 25	1 50	3 00
Cyclone (B).....	15	20	25	50	75	1 00	1 25	1 50	3 00
Drouth King (P)...	15	20	25	50	75	1 00	1 25	1 50	3 00
Emperor (B).....	20	25	30	60	1 00	1 35	1 70	2 00	4 00
Empress (B).....	20	25	30	60	1 00	1 35	1 70	2 00	4 00
Excelsior (B).....	20	25	30	60	1 00	1 35	1 70	2 00	4 00
Earliest (B).....	20	25	30	60	95	1 25	1 50	1 75	3 50
Enormous (P).....	20	25	30	60	95	1 25	1 50	1 75	3 50
Gandy (B).....	15	20	25	50	75	1 00	1 25	1 50	3 00
Glenn Mary (B)....	15	20	25	50	75	1 00	1 25	1 50	3 00
Greenville (P).....	15	20	25	50	75	1 00	1 25	1 50	3 00
Gladstone (B).....	25	30	35	70	1 20	1 65	2 10	2 50	5 00
Haverland (P).....	15	20	25	50	75	1 00	1 25	1 50	3 00
Kansas (P).....	50	85	1 50	3 00	5 00	6 75	8 50	10 00	20 00
Johnsons Early (B)	20	25	30	60	1 00	1 35	1 70	2 00	4 00
Louis Gauthier (B).	20	25	30	60	1 00	1 35	1 70	2 00	4 00
Lovett (B).....	15	20	25	50	75	1 00	1 25	1 50	3 00
Mexican E. (B).....	20	25	30	60	1 00	1 35	1 70	2 00	4 00
Michel's Early (B).	15	20	25	50	75	1 00	1 25	1 50	3 00
Manwell (B).....	15	20	25	50	75	1 00	1 25	1 50	3 00

(Continued on next page.)

Strawberries (Continued.)

VARIETIES	For 12	For 25	For 50	For 100	For 200	For 300	For 400	For 500	For 1000
Michigan (B).....	20	25	30	60	95	1 25	1 50	1 75	3 50
Magoon (B).....	20	25	30	60	95	1 25	1 50	1 75	3 50
Marshall (B).....	20	25	30	60	95	1 25	1 50	1 75	3 50
Maxiums (B).....	25	30	35	70	1 20	1 65	2 10	2 50	5 00
Monitor (B).....	50	85	1 50	3 00					
New York (B).....	25	30	35	70	1 20	1 65	2 10	2 50	5 00
Nick Ohmer (B).....	20	25	30	60	1 00	1 35	1 70	2 00	4 00
Ocean City (B).....	15	20	25	50	75	1 00	1 25	1 50	3 00
Parker Earle (B).....	20	25	30	60	95	1 25	1 50	1 75	3 50
Parker Earle Imp'd (B).....	20	25	30	60	1 00	1 35	1 70	2 00	4 00
Pennell (B).....	25	30	35	70	1 20	1 65	2 10	2 50	5 00
Ridgeway (B).....	20	25	30	60	1 00	1 35	1 70	2 00	4 00
Ruby (B).....	20	25	30	60	1 00	1 35	1 70	2 00	4 00
Rough Rider (B).....	50	85	1 50	3 00	5 00	6 75	8 50	10 00	20 00
Senator Dunlap (B).....	50	85	1 50	3 00	5 00	6 75	8 50	10 00	20 00
Sample (P).....	20	25	30	60	1 00	1 35	1 70	2 00	4 00
Star (B).....	20	25	30	60	1 00	1 35	1 70	2 00	4 00
Seaford (P).....	20	25	30	60	95	1 25	1 50	1 75	3 50
Tenn. Prolific (B).....	15	20	25	50	75	1 00	1 25	1 50	3 00
Up-to-date (B).....	25	30	35	70	1 20	1 65	2 10	2 50	5 00
Warfield (P).....	15	20	25	50	75	1 00	1 25	1 50	3 00
Wolverton (B).....	15	20	25	50	75	1 00	1 25	1 50	3 00

Black Raspberries.

VARIETIES.	For 6	For 12	For 25	For 50	For 100
Black Diamond.....	\$0 30	\$0 50	\$0 85	\$1 40	\$2 50
Eureka.....	25	35	50	85	1 50
Conrath.....	25	35	50	85	1 50
Cumberland.....	35	60	1 00	1 75	3 00
Gregg.....	25	35	50	85	1 50
Kansas.....	25	35	50	85	1 50
Older.....	25	35	50	85	1 50
Palmer.....	25	35	50	85	1 50
Munger.....	30	50	75	1 25	2 00

Red Raspberries.

VARIETIES	For 6	For 12	For 25	For 50	For 100
Colorado Iron Clad.....	\$0 30	\$0 50	\$0 75	\$1 25	\$2 00
Cuthbert.....	25	35	50	85	1 50
Early King.....	35	60	1 00	1 75	3 00
Miller.....	25	35	50	85	1 50
Turner.....	25	35	50	85	1 50

Purple Raspberries.

VARIETIES	Each	For 6	For 12	For 25	For 50	For 100
Columbian.....	\$0 10	\$0 30	\$0 50	\$0 75	\$1 25	\$2 00
Cardinal.....	35	1 50	3 00			
Haymaker.....	40	2 00	4 00			

Blackberries.

VARIETIES	For 6	For 12	For 25	For 50	For 100
Western Triumph.....	\$0 30.....	\$0 50.....	\$0 85.....	\$1 40.....	\$2 50.....
Taylor Prolific.....	30.....	50.....	85.....	1 40.....	2 50.....
Snyder.....	30.....	50.....	85.....	1 40.....	2 50.....
Ancient Briton.....	30.....	50.....	85.....	1 40.....	2 50.....
Early Harvest.....	30.....	50.....	85.....	1 40.....	2 50.....
Eldorado.....	35.....	60.....	1 00.....	1 75.....	3 00.....
Erie.....	30.....	50.....	85.....	1 40.....	2 50.....
Kittatinny.....	30.....	50.....	85.....	1 40.....	2 50.....
Ohmer.....	35.....	60.....	1 00.....	1 75.....	3 00.....
Agawam.....	35.....	60.....	1 00.....	1 75.....	3 00.....
Minnewaski.....	35.....	60.....	1 00.....	1 75.....	3 00.....
Messereau.....	50.....	85.....	1 50.....	2 75.....	5 00.....

Dewberries.

VARIETIES	For 6	For 12	For 25	For 50	For 100	For 200	For 300	For 400	For 500	For 1000
Lucretia.....	\$0 30.....	\$0 50.....	\$0 75.....	\$1 00.....	\$2 00.....	\$3 00.....	\$4 00.....	\$5 00.....	\$6 00.....	\$12 00.....
Austin's Improved.....	35.....	60.....	90.....	1 25.....	2 50.....	---	---	---	---	---

Currants.

VARIETIES.	For 6	For 12	For 25	For 50	For 100
London Market.....	\$0 40.....	\$0 75.....	\$1 50.....	\$3 00.....	\$5 00.....
Fay.....	50.....	1 00.....	2 00.....	3 50.....	6 00.....
Victoria.....	40.....	75.....	1 25.....	2 50.....	4 50.....
Cherry.....	40.....	75.....	1 25.....	2 50.....	4 50.....
Pomona.....	60.....	1 20.....	2 25.....	4 50.....	8 00.....

Gooseberries.

VARIETIES	Each	For 6	For 12	For 25	For 50	For 100
Smith's } 1 yr..	\$15..	\$0 75.....	\$1 25.....	\$2 00.....	\$4 00.....	\$7 00.....
Improved } 2 yrs.	20..	1 00.....	1 50.....	2 50.....	5 00.....	9 00.....
Downing, 1 yr..	15..	75.....	1 25.....	2 00.....	3 50.....	6 00.....
Downing, 2 yrs..	20..	1 00.....	1 50.....	2 50.....	4 50.....	8 00.....
Houghton, 1 yr..	15..	75.....	1 25.....	2 00.....	3 50.....	6 00.....
Houghton, 2 yrs..	20..	1 00.....	1 50.....	2 50.....	4 50.....	8 00.....
Red Jacket, 1 yr..	25..	1 25.....	2 00.....	3 50.....	5 00.....	9 00.....
Red Jacket, 2 yrs.	30..	1 50.....	2 50.....	4 50.....	7 00.....	12 00.....

Black Grapes.

VARIETIES	Each	For 6	For 12	For 25	For 50	For 100
Barry, 1 yr.....	\$25..	\$1 25.....	\$2 00.....	\$3 50.....	\$6 00.....	\$10 00.....
Barry, 2 yrs.....	30..	1 50.....	2 50.....	4 50.....	7 00.....	12 00.....
Concord, 1 yr..	10..	40.....	75.....	1 25.....	2 50.....	4 00.....
Concord, 2 yrs.	15..	60.....	1 00.....	1 75.....	3 50.....	6 00.....
Worden, 1 yr..	10..	40.....	75.....	1 25.....	2 50.....	4 00.....
Worden, 2 yrs.	15..	60.....	1 00.....	1 75.....	3 50.....	6 00.....
Moore's } 1 yr.	10..	40.....	75.....	1 25.....	2 50.....	4 00.....
Early } 2 yrs	15..	60.....	1 00.....	1 75.....	3 50.....	6 00.....

Black Grapes, (Continued.)

VARIETIES	Each	For 6	For 12	For 25	For 50	For 100
Wilder, 1 yr....	15..	60..	1 00..	1 75..	3 50..	6 00..
Wilder, 2 yrs..	20..	90..	1 50..	2 50..	4 50..	8 00..
Camp. } 1 yr..	50..	2 50..	4 00..	7 00..	12 00..	20 00..
Early } 2 yrs.	60..	3 00..	5 00..	9 00..	16 00..	30 00..

Red Grapes.

VARIETIES	Each	For 6	For 12	For 25	For 50	For 100
Delaware, 1 yr....	\$15..	\$0 60.....	\$1 00.....	\$1 75.....	\$3 00.....	\$5 00.....
Delaware, 2 yrs..	20..	75.....	1 25.....	2 00.....	3 50.....	6 00.....
Agawam, 1 yr....	15..	60.....	1 00.....	1 75.....	3 00.....	5 00.....
Agawam, 2 yrs..	20..	75.....	1 25.....	2 00.....	3 50.....	6 00.....
Brighton, 1 yr....	15..	60.....	1 00.....	1 75.....	3 00.....	5 00.....
Brighton, 2 yrs..	20..	75.....	1 25.....	2 00.....	3 50.....	6 00.....
Jefferson, 1 yr....	20..	75.....	1 25.....	2 00.....	4 00.....	7 00.....
Jefferson, 2 yrs..	25..	90.....	1 50.....	2 50.....	5 00.....	9 00.....
Wyoming, 1 yr....	20..	75.....	1 25.....	2 00.....	3 50.....	6 00.....
Wyoming, 2 yrs..	25..	90.....	1 50.....	2 50.....	4 50.....	8 00.....
Salem, 1 yr.....	20..	75.....	1 25.....	2 00.....	3 50.....	6 00.....
Salem, 2 yrs.....	25..	90.....	1 50.....	2 50.....	4 50.....	8 00.....

White Grapes.

VARIETIES	Each	For 6	For 12	For 25	For 50	For 100
Moore's } 1 yr..	\$25..	\$1 00.....	\$1 75.....	\$3 00.....	\$4 50.....	\$8 00.....
Diamond } 2 yrs..	30..	1 25.....	2 00.....	3 50.....	5 50.....	10 00.....
Niagara, 1 yr....	20..	75.....	1 25.....	2 00.....	3 50.....	6 00.....
Niagara, 2 yrs..	25..	90.....	1 50.....	2 50.....	4 50.....	8 00.....
Duchess, 1 yr....	25..	1 00.....	1 75.....	3 00.....	4 50.....	8 00.....
Duchess, 2 yrs..	30..	1 50.....	2 50.....	4 50.....	7 00.....	12 00.....

Perfection Plant Setter - - - - - \$3.50
 Roller Runner Cutter - - - - - \$1.75
 These tools can be shipped with plants.

In making out your order please observe that there is but one price and that for the quantity stated. All customers are treated alike. There are no discounts. We are trying to see how good plants we can grow and how cheap we can sell them. They are the best plants I have ever seen and prices stated are the lowest at which they can be furnished. All orders sent by mail require postage added to cost of plants. See "Notice to Patrons." Inside Back Cover.

PLEASE CUT THIS SHEET OUT TO SEND YOUR ORDER ON.

Date 190.....

R. M. KELLOGG, Three Rivers, Mich.:

For the amount enclosed (\$-----) please fill the following order.
Read notice to Patrons on the inside of back cover before filling out your order.

Name _____
(Write name very plainly. Print it so there can be no mistake.)

Postoffice

County _____ State _____

Ship by _____
(Say whether to be sent by freight, express, or mail.)

Name of Freight }
or Express } Station is

County _____ State _____

[illegible]

THE FOLLOWING LETTERS

Are but Samples of Many Hundreds Received from Correspondents.

G. S. Crissey, Editor of "Fruit," New York.—Your ideas are sound. I speak the more confidently because I have put them to a test on my own grounds. I am simply indebted to you for raising my strawberry yield from two thousand to ten thousand quarts per acre. Berries grown after your directions brought twelve cents per quart when others were bringing only eight cents.

A. Walrath, Holt Co., Nebraska.—I am so pleased with the plants received during the past four years that I send you another order. As to the berries, they lay in heaps on the bed and crowded each other for room to grow in. They are so large, bright and juicy! They cannot be beat for quantity and quality and the demand for them cannot be supplied. As for your raspberries, I cannot praise them too much.

J. A. Griffin, Oakland Co., Ark.—I had the finest strawberries last year that you ever saw from plants bought of you. I do not believe you ever raised finer ones with all your experience. I had 550 quarts from 450 plants.

Geo. Rhoads, Allen Co., Kansas.—The order I enclose is evidence that the plants I received of you did splendid, and that I am pleased with results. I was laughed at for sending so far away for plants, but now it is my turn to laugh.

Prof. A. T. Giddings, Keene Co., Texas.—I have been experimenting and my conclusions force me to the recognition of the vast superiority of your strawberry plants over any other grower. We have set much stock from different southern growers who can furnish it cheaper at first cost, but it is much more expensive in the long run for they do not respond to good care as yours do. I felt a statement of this kind was due you.

C. D. Rogers, Bayfield Co., Wis.—I shall send to you for plants again this spring. I want strawberries that will put coin in my pockets like the plants you sent me two years ago. By the way, I have an acre of the finest blackberries that ever grew—from the plants you sent me.

T. C. Johnson, Weber Co., Utah.—Our raspberries did finely. They are a wonder to all who have seen them. I enclose an order for a neighbor and hope he will be as well pleased as I have been.

T. W. Cummings, Orleans Co., Vt.—Three years ago I ordered 1,000 strawberry plants of you. The fruit was a revelation to Derby folks. Such fruit as our plants produced was not to be found on the market. Now I want to try your stock again and enclose an order for this spring.

A. D. Havenhill, Kendall Co., Ill.—I send you a snap shot of one hill of blackcaps fourteen months old. You will notice the enormous bunches of fruit and the entire row was loaded in the same way. The grape vines were worth twice as much as those I got of another firm.

Thomas A. Peake, Hardin Co., Ky.—The plants I bought of you came all right and were in splendid condition. Every one is living and doing nicely. To say I am pleased with them is putting it mildly. The truth is I am delighted with them. All of my grapes, currants, blackberries and raspberries, except seven or eight of the last named, are doing finely. I want to have the boss berry patch of the neighborhood, and I know I will if I can have the boss berry grower of the country to direct and advise me. A party near here put out several thousand "cheap" plants this spring. I would not take such plants as a gift. There is no comparison between his beds and mine.

W. L. Meunet, Switzerland Co., Ind.—The plants did wonders. The berries were fine in every way and held up in size to the last. I shall renew my propagating beds from your stock again this spring.

C. R. Ryland, Ashland Co., Ohio.—Please send your catalogue to my son. I do not want him to use anything but your Pedigree Plants. I got plants from you three years ago and they bore the largest and best berries to be seen in this part of the country. People wanted to know how I could grow such berries. It was the talk all over the county. I give your Pedigree Plants the credit of my success.

J. T. Baldwin, Washington Co., Penn.—From the plants I received of you I had berries ten days after other people were out, and the last I sold at 25 cents per quart. The other fruit growers had to acknowledge I had the finest berries in the market. I will send for plants again this spring.

J. B. Graham, Warren Co., Ky.—Two years ago we bought five thousand strawberry plants of you, which was our third annual order, and followed your directions as close as possible. We picked a large crop of fine berries and although we had had no experience in the berry business, and the market was crowded more than ever known before, we disposed of our crop at a good price. Thanks to your instructions.

B. B. Adams, Daviess Co., Mo.—Find enclosed an order for more of your pedigree plants. Five years ago I bought my first plants from you, from which I obtained the nicest berries I ever raised. Your methods of propagation and cultivation are certainly correct, as the results I have had with your plants fully demonstrate.

F. B. Peck, Summit Co., Ohio.—Your mode of propagating plants is all right. I would rather have five hundred of your plants to make money with than one thousand of any other grower.

C. E. Palmer, Niagara Co., N. Y.—Although the last season was very hot and dry, my berries were remarkably large and of uniform size. Your Pedigree Plants are all right and I am more than pleased with results. All who saw the berries from these plants said they were the finest in Niagara county, and on the Niagara Falls market they took the cake. I want more plants this spring.

B. F. Winters, Bollinger Co., Mo.—I must say that the plants received from you were the finest I ever saw and produced the finest berries ever seen in this country. Many were seven inches in circumference.

J. O. Wallace, Madison Co., N. Y.—Two years ago I sent to you for strawberry plants. I set 400 and picked fifteen bushels of the finest berries ever seen in this section. I sold them for twelve cents per quart when others were getting from five to seven cents. People would stop when riding past to see them, and would have some of the berries. Everybody said they had never seen anything like them and did not suppose such berries could be grown. I gave them your address and they will send for plants.

S. Craft, Appanoose Co., Iowa.—Find enclosed an order for plants. I have been getting plants of you for several years and I find them far superior to those propagated in the ordinary way. Some of the strawberries measured two inches in diameter. The natives were surprised and wondered how I could grow strawberries three times as large as my neighbors.

Elias Carpenter, Kane Co., Ill.—I am more than pleased with the plants I got of you last spring. The vines hung full of the largest and nicest berries that were ever in this town. They set the people almost crazy. I could have

J. A. Stearns, Rensselaer Co., N. Y.—I have a plat of strawberries that I received from you and grew them in hedge row and I have lots of plants that measure fourteen inches in diameter. I have followed your mode of cultivation. I expect a great crop.

B. P. Drummond, Lee Co., Ill.—I enclose picture of my strawberry patch grown from your plants received last spring. I never saw the like before. The reason is I never got any of Kellogg's Pedigree Plants before.

Isaac Lehner, St. Joseph Co., Mich.—I started a bed of strawberry plants received from you six or seven years ago and I was astonished at the splendid results. Will want more this year.

William Sanderson, Shelby Co., Tenn.—I purchased my plants three years ago of you and I now have over five acres in good bearing condition. I have followed the directions in your catalogue. Your plant setter has given perfect satisfaction. I consider it the best tool ever invented for the purpose.

E. B. Dickson, Cayuga Co., N. Y.—The plants I purchased from you were planted on one-half acre of ground and the past season I picked 3,700 quarts of the finest berries ever seen in this county. Some varieties yielded at the rate of ten thousand quarts to the acre. I cared for them according to your directions after picking season closed and the plants now look as promising as they did a year ago.

T. W. Minesinger, Hancock Co., W. Va.—The strawberry plants we got of you two years ago were the finest we ever received and we had the finest berries that went to our market.

THIS LETTER IS FROM

NAME.....

P. O.

COUNTY.....

STATE.....

 Please write Your Name and Address on
the above lines.

PUT STAMP HERE.

 This is one of
the Strongest enve-
lopes made. It is
properly addressed
to get Pedigree
Plants of Highest
fruiting power.

R. M. KELLOGG,

Three Rivers,

Corner Portage Ave. and Hoffman St.

Mich.



NOTICE TO PATRONS.

The plants herein offered are propagated from **PURE PEDIGREE STOCK** and ideal plants, as explained in the chapters on "Improvement of Plants." I am confident they are the only plants obtainable propagated in this manner, and that their fruiting vigor cannot be equaled. While I practice the highest cultivation I know how to give, I have demonstrated that the vigor of my plants has been the basis of my success. By all means start a propagating bed this season.

Orders Must Amount to One Dollar.

The correspondence, postage, booking and filling orders for less than that amount is done at a loss.

Taking Up Strawberry Plants.

The whole row of plants is taken up, and all those poorly rooted are thrown out. The fork used for the purpose is so constructed that plants are not bruised or roots broken off. All dead leaves and stems are picked off and roots straightened by such a system that from the time they leave the ground until they are ready for shipment they are not exposed a half minute altogether.

Substitution.

We desire to furnish each customer exactly what he orders, but sometimes find the variety all sold before his order is reached, all orders being filled in the rotation in which they are received and booked. If no substitution is permitted we are obliged to disappoint the customer by returning the money late in the season. There are several varieties in the same season and of equal value, and if we are out of the variety ordered and substitution is permitted we will add 10 per cent. to the plants substituted. Unless you expressly state "No SUBSTITUTION," we will understand you desire your order filled as above stated. There is very little danger of not getting the varieties desired, if orders are sent in early.

Price of Plants.

The prices quoted are net, and the lowest at which they can be grown and placed on the market. This list abrogates all former price lists. No charge will be made for packing, crates or boxes, and delivery to forwarders. No plants sold for fall planting. Not less than one dozen strawberry plants will be sold; it requires that number or a fair trial.

No Discounts and no Agents.

In view of the fact that so many tree dealers and agents have used my catalogue, and represented themselves as my agents, and then delivered cheap plants from other nurserymen, thus greatly injuring my reputation, I am forced to announce that I do not accept orders from agents. No other nurseryman in the country propagates plants by my method, so when an agent represents he is selling pedigree stock, it will be safe to give him the go by.

Terms

strictly cash with order. Orders are not booked unless one-third the amount is remitted and balance before shipment.

Order Early.

All orders are filled in the rotation in which they are received, hence the earlier they are sent in the better.

How to Remit.

Send money by postoffice order, bank draft, express order or registered letter. I cannot be responsible for money sent loose in a letter. When private checks are sent add 15 cents to cover cost of collection.

References.

You can get my commercial credit and standing at any bank, factory or store using R. G. Dunn & Co's or Brad-

street's commercial reports; or write to First National Bank or Postmaster, Three Rivers, Mich.

Plants by Mail.

Plants are packed with sphagnum moss, oiled manila paper, with leaves exposed, so they will go safely to any part of the United States for one cent for each two ounces (or eight cents per pound), and to Canada at one cent per ounce. We send plants as far east as Nova Scotia, and west to British Columbia with entire success.

Postage.

Postage on plants is as follows and must be sent in addition to price of plants. Strawberries 5 cents per dozen, 25 cents per hundred. Strawberry plants cannot be sent by mail at thousand rates. Raspberries, Blackberries and Dewberries 10 cents per dozen, 50 cents per 100. Grapes, Currants and Gooseberries 20 cents per dozen, 75 cents per 100. Two year plants are too large to be sent by mail.

Express Rates.

Express charges are twenty per cent. less than general merchandise to any part of the country. All small orders are generally cheaper by express than freight as only pound rates are charged while railroads charge for 100 pounds without regard to weight when sent by freight.

Freight.

Our railroad connections are first-class. Plants leaving here at six o'clock in the evening arrive in Chicago, Toledo and Detroit the same night and from these points they go in fast through freights to all principal cities and intermediate points. It is seldom they fail to arrive on time but sometimes delays occur and when notified they are behind time we hurry them forward by telegraphic tracers. We advise purchasers to consult local freight agents as to time and give the route over which you wish them sent by freight. If no shipping directions are given we exercise our best judgment without assuming any responsibility.

Guarantee of Genuineness.

The plants being propagated in special beds and labeled when taken up, would seem to preclude the possibility of mistake, and I guarantee plants true to label, with express understanding that if a mistake happens to be made, I am not to be held for any damages beyond the amount received for the plants.

Guaranteeing Results.

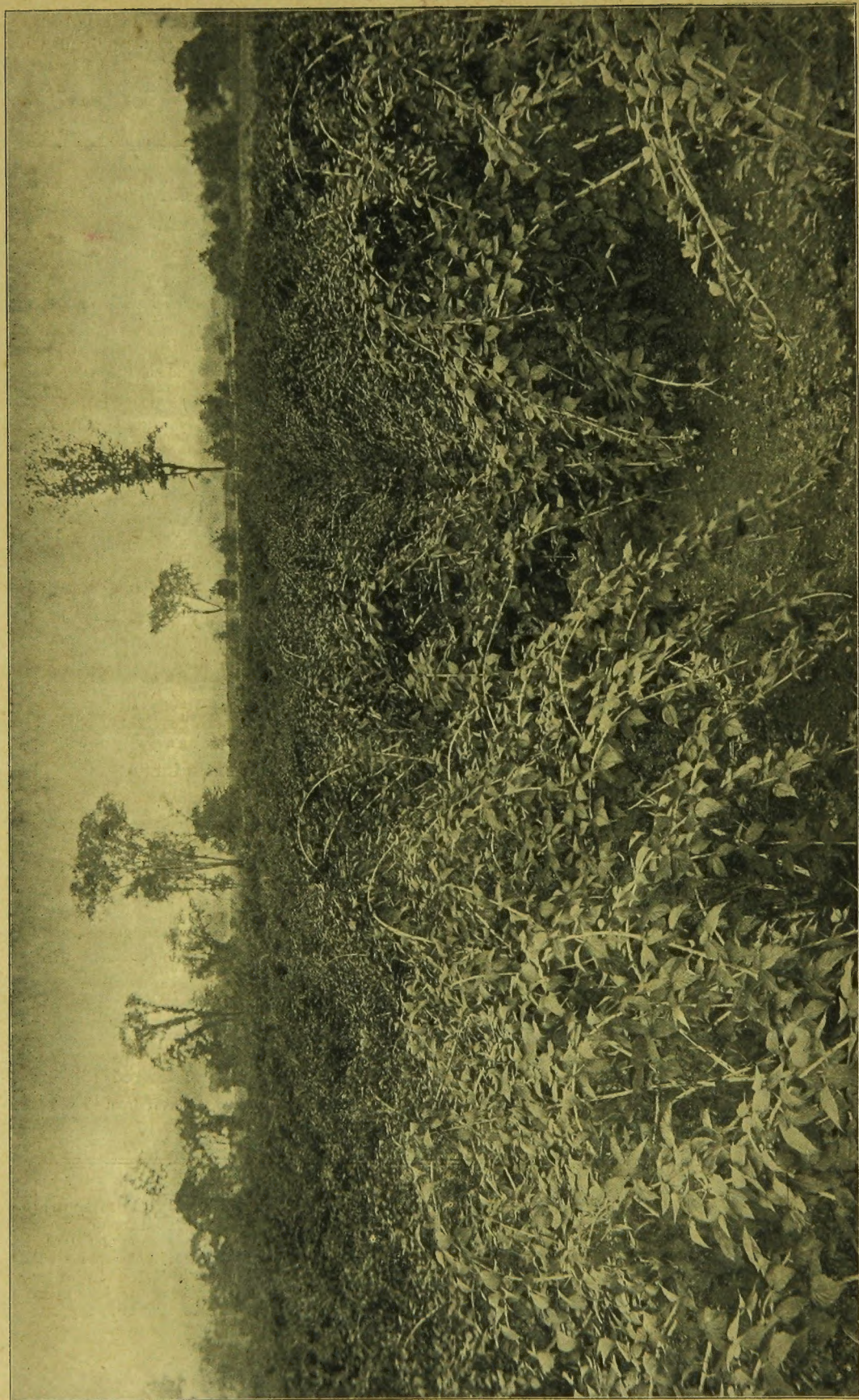
We send plants to the most distant states with entire success to anybody and everybody who order them. I am exceedingly anxious that they shall meet their highest expectations, and to this end will do all in my power to contribute to success. But after they are delivered to express companies or railroads, they belong to the purchasers and I have no control over them. I do not know what treatment they are to receive, hence you can readily see why I cannot, and do not guarantee any results whatever. My responsibility ceases when delivered to express or railroad.

Orders Are Acknowledged

as soon as received. If you do not hear from us after a reasonable time, write again.

NOTICE.

This Booklet will be revised every year and sent out free to all who are interested in it. Do not loan it but keep it for reference. If you want one sent to a friend send his address on a postal card and we will mail it with your name and compliments so he will know who sent it. Our object is to place fruit growers in possession of such facts concerning plant life and the laws which govern the development of fruit as will enable them to succeed. My success depends on your success.



Photograph of Pedigree Raspberry Field Taken the Second Fall After Planting Showing Wonderful Vigor. These Are the Plants We Propagate From.